

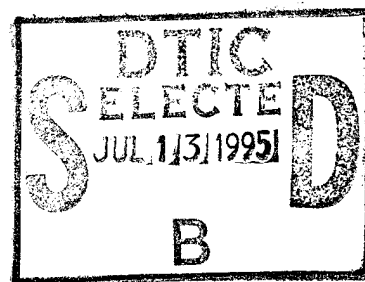


Research Product 95-09

The Army Command and Control Evaluation System Documentation

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April 1995



**Fort Leavenworth Research Unit
Manpower and Personnel Research Division**

U.S. Army Research Institute for the Behavioral and Social Sciences

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A Field Operating Agency Under the Jurisdiction
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13. ABSTRACT (Maximum 200 words) <p>This document is intended to be the basic resource for anyone attempting to use the Army Command and Control Evaluation System (ACCES) to measure command and control performance during a freeplay command post exercise at the division level. The ACCES system is appropriate for use at the brigade and corps levels also, but has rarely been used for other than division level exercises. A comprehensive description of ACCES, its development, and its promise is available in Halpin (1995). This report provides a description of ACCES Version 93 and is current as of the end of December 1993. No further modification of the ACCES methodology is planned at this time.</p> <p>Included as appendixes to this document are the materials necessary for learning how to conduct an ACCES application. They are the result of 3-year contracts with Evidence Based Research, Inc., for specific enhancements to the ACCES system and with Quantum Research International for support in data collection and analysis.</p> <p>Appendix A comprises the nine lessons of the data collectors' program of instruction (DC-POI). Appendix B is the Analyst's POI. Appendix C is the Analyst's</p> <p style="text-align: right;">(Continued)</p>				
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Guide. Appendix D gives specific definitions of the ACCES measures. Appendix E contains the Data Collection and Reduction Forms.

Research Product 95-09

**The Army Command and Control Evaluation System
Documentation**

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FOREWORD

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is conducting research to develop improved methods for measuring the performance of commanders and their staffs at the corps, division, and brigade levels. The materials provided here were developed as part of the second phase in the development of the Army Command and Control Evaluation System (ACCES). This document is intended to be the basic resource for anyone attempting to use ACCES to measure command and control performance during freeplay command post exercises. The ACCES system was developed for assessing performance of division command posts but has also been applied at the corps level.

There was general agreement that the first phase ACCES provided valuable evaluative and diagnostic information in support of command and staff training. In this second phase, ACCES measures were modified to bring them more in line with doctrinal tasks and standards and to refine the data collection and analysis procedures. The modification will provide more accurate and complete feedback during and after a several day training exercise.

This research was conducted as part of the Research Task entitled BATTLE COMMAND: Improving Commander and Staff Effectiveness, in coordination with the Command and Control Directorate of the Combined Arms Command-Combat Development (CAC-CD) and the TRADOC System Manager for Army Command and Control Systems (TSM ACCS). Colonel Dials, TSM ACCS, formally requested, 20 April 1994, that the Operational Test and Evaluation Command (OPTEC) apply ACCES to the evaluation of the Army Tactical Command and Control System (ATCCS). Budget considerations and planning lead-time precluded the requested application in 1994, but OPTEC has stated its intention to explore future applications of ACCES. A reduced version of ACCES was used to generate insights on the impact of Mobile Strike Force technologies during Prairie Warrior '94.

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THE ARMY COMMAND AND CONTROL EVALUATION SYSTEM DOCUMENTATION

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THE ARMY COMMAND AND CONTROL EVALUATION SYSTEM DOCUMENTATION

OVERVIEW

This document is intended to be the basic resource for anyone attempting to use ACCES to measure command and control performance during a freeplay command post exercise at the division level. The ACCES system is intended to be appropriate at the brigade and corps levels also, but has rarely actually been used for other than division level exercises. A comprehensive description of ACCES, its development, and its promise is available in Halpin (1995). The following brief description is excerpted from that document.

ACCES was initially developed by Defense Systems, Inc. (DSI), in the period October, 1986 to January, 1990, under the direction of the Fort Leavenworth, Kansas, Field Unit of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI). In the spring of 1990, ARI awarded two follow-up contracts: one to Quantum Research International for support in conducting ACCES applications and the second to Evidence Based Research, Inc., for specific required enhancements to the ACCES system. Both contracts expired near the end of 1993. This report provides a description of ACCES Version 93 and is current as of the end of December, 1993. No further modification of the ACCES methodology is planned at this time.

Material Command (MACOM) commanders and the Training and Doctrine Command (TRADOC), through the Battle Command Training Program and the Support to Exercise Program, provide frequent opportunities for brigade, division, and corps staffs to train in command post exercises (CPXs) and field training exercises (FTXs). The commanders and staffs are exposed to varying environments and situations and are given the opportunity to practice and hone their ability to function as effective command and control (C²) systems. The Operational Test and Evaluation Command (OPTEC) is frequently called on to evaluate C² materiel systems. Less formal system evaluations are conducted throughout C² systems' life-cycles by agencies such as the Battle Command Battle Laboratory, Fort Leavenworth, Kansas, and the ATCCS Experimentation Site, Fort Lewis, Washington.

Both training and test and evaluation (T&E) exercises require some measure(s) of system performance. In the training environment, exercises provide little benefit unless participants are provided feedback on their performance. In the test and evaluation environment, measures and criteria of system success or failure are obviously critical. However, while measures have been developed that address the efficiency of selected aspects of C² performance (e.g., throughput rates for certain types of messages within certain communication systems), there is no accepted overall measure of C² effectiveness. Under the sponsorship of the Combined Arms Command—Combat Development (CAC—CD), ARI has taken steps to address this need for C² measurement through the development of ACCES, a measurement system to evaluate the effectiveness of C² at various levels. ACCES differs from traditional force effectiveness measures (e.g., force loss ratios) that address the headquarters primarily in terms of its subordinates' efforts. In contrast, ACCES is based on the premise that C² effectiveness may be defined as the effectiveness of a headquarters staff; in this view, C² effectiveness measurement requires an understanding of the processes that are performed by the staff to

facilitate the performance of subordinate elements. Thus, we need a means to measure quantitatively how well the critical staff processes are performed.

The ACCES methodology has evolved over the last several years. During that period ACCES has provided the framework for data collection and analysis at seventeen division CPXs and one corps CPX. During or after many of these exercises the unit commanders and their principal staff were provided feedback on their C² effectiveness based on the ACCES observations and measures. While no one will claim that ACCES is the ultimate system which captures all aspects of C² effectiveness, there has been general agreement that the ACCES approach has provided valuable evaluative and diagnostic information in support of C² training. Follow-on developmental efforts have modified ACCES measures in order to bring them more in line with doctrinal tasks and standards and refined the data collection and analysis procedures in order to provide more accurate and complete feedback during and after a several day training exercise. OPTEC is exploring the application of ACCES to the evaluation of the Army Tactical Command and Control System (ATCCS).

Despite the word "evaluation" in the label "Army Command and Control Evaluation System", it must be emphasized that ACCES does not provide a rating of C² effectiveness; i.e., ACCES does not grade a division HQ as having passed or failed against some set of criteria. Rather, ACCES provides indicators of C² effectiveness. It is precisely these indicators which are of value to a commander during and after a CPX. A major strength of the Army's Battle Command Training Program (BCTP) is the quality and quantity of feedback provided to the training audience by BCTP personnel. ACCES indicators provide additional detail and a different perspective on C² effectiveness than currently provided by BCTP. Unfortunately, one of the strengths of ACCES, the ability to draw from behaviors occurring in different locations at different times, also is a weakness of the system when applied in a training environment with its requirement for rapid feedback. A major focus of recent ACCES development effort was the exploration of means to simplify ACCES data collection and analysis procedures and techniques so as to reduce the time required to provide substantive feedback to the unit being observed. This effort was less than fully successful. While a knowledgeable ACCES analyst can, by virtue of his own observations and discussions with ACCES observers, provide unique insights to the unit during the course of the exercise, most of the specific, quantitative ACCES measures still cannot be calculated until several days after the end of the exercise.

In the typical test of a materiel system, the goal is to evaluate the system against system requirements which specify performance objectives or standards. However, there are few if any accepted performance objectives or standards for C² systems. We believe that the key to C² test and evaluation is the use of a stable baseline of system performance data which can be used for comparison. Rather than defining *a priori* standards of "successful" C² system performance, we argue that the most appropriate evaluation strategy is one which compares the new system to the old. ACCES measures are targeted to critical C² system

performance characteristics and a collection of ACCES measures across several units can provide a stable baseline for such comparisons.

There are at least two types of C² system evaluation which could utilize ACCES. One target would be the examination of the effectiveness of the overall C² system in a test unit which is trying out a change in the C² system itself (e.g., a unit using a new command post structure, or one using a new computer-based system). A second target would be the examination of the effectiveness of the overall C² system in a test unit which is trying out some change in one of the supporting systems. The argument here is that while a subsystem like Intelligence or Fire Support should be evaluated in its own right to determine whether it is reliable, usable, etc., it is also necessary to determine whether that subsystem provides any value-added to the overall C² system in the context of the overall Army Tactical Command and Control System (ATCCS). In both types of C² test and evaluation, the use of a stable ACCES baseline can be used for comparison to establish the incremental changes in C² system performance during the test.

The continued evolution of ACCES has made it difficult to establish a stable baseline. The ACCES (version 93) which is described in this paper is the last in a series stretching back five years. Each of the "versions" of ACCES has differed in some significant respects from prior and subsequent versions; we have evolved the ACCES model of command and control, we have changed the focus of our measurement, and we have changed our data collector training procedures (and hence have changed the way data are collected and analyzed). These improvements have been at the expense of creating a stable baseline of similar data elements similarly collected under similar conditions from similar units. However, many of the major measures have remained sufficiently constant to enable the creation of a useful database comprising ten CPXs of which eight were BCTP Warfighter exercises.

Included as appendices to this document are the materials necessary for learning how to conduct an ACCES application. They are the result of the three year contracts, previously mentioned, with Evidence Based Research, Inc. for specific enhancements to the ACCES system, which had been developed during the previous five years, and with Quantum Research International for support in data collection and analysis.

Appendix A comprises the nine lessons of the data collectors program of instruction (DC-POI).

Appendix B is the Analyst's POI.

Appendix C is the Analyst's Guide.

Appendix D gives specific definitions of the ACCES measures.

Appendix E contains the Data Collection and Reduction Forms.

APPENDIX A

ARMY COMMAND AND CONTROL EVALUATION SYSTEM (ACCES)

DATA COLLECTOR PROGRAM OF INSTRUCTION

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Guidance for the Instructor
of the ACCES Training

Purpose of the Instruction

The purpose of the observer training is to produce skills in recognition and data recording using the ACCES data collection forms. This course integrates the recognition and data recording skills into blocks of instruction built around the ACCES measurement categories and incorporates graded and ungraded practical exercises.

Effective instruction will maximize the use of the two days of training time, improve measurement reliability, and enhance the validity of the application. The training covers standardized ACCES measures and methods to produce observers who perform consistently using the specified procedures.

Instructors should be aware that those passages of this program of instruction that refer to or draw from US Army publications utilize those available to the authors during the initial development of this product. Do not assume that all information is current and authoritative; refer to current manuals!

Training Overview

There are 9 lessons in this POI in a two-day period, including a number of examples, discussions, and brief quizzes. The training should include a tactical overview of the exercise and a discussion of administrative requirements for the specific application.

The following list offers a brief overview of the 9 lessons.

Lesson 1-C2: "What is C2?" (45 mins)

Provides an overview of Army command and control (C2) doctrine with a student handout and supporting view graph transparencies (VGTs). Quiz with answers.

Lesson 2-WA: "What is ACCES?" (60 mins)

Provides an introductory overview of the purpose and methodology of ACCES. Lecture and supporting VGTs (including data forms). Quiz with answers.

Lesson 3-PD: Preparation of Directives (60 mins)

A description of Preparation of Directives, an opportunity to discuss and complete a data collection sheet, supporting VGTs including a timeline of events from which to code the example form. Quiz with answers.

Lesson 4-DC: Decisions (45 mins)

A description of Decisions, an opportunity to discuss and complete a data collection sheet, supporting VGTs including a timeline of events from which to produce the example form. Quiz with answers.

Lesson 5-CA: Course of Action Analysis (45 mins)

A description of Course of Action Analysis, an opportunity to discuss and code an example data collection sheet, supporting VGTs including a timeline of events from which to produce the example form. Quiz with answers.

Lesson 6-SA: Situation Assessment (45 mins)

A description of Situation Assessment, an opportunity to discuss and complete a data collection sheet, supporting VGTs including a timeline of events from which to produce the example form. Quiz with answers.

Lesson 7-IE: Information Exchange (45 mins)

A description of Information Exchange, an opportunity to discuss and complete an example data collection sheet, supporting VGTs including a timeline of events from which to produce the example. Quiz with answers.

Lesson 8-IH: Information Handling (45 mins)

A description of Information Handling, an opportunity to discuss and complete data collection sheets, supporting VGTs including a timeline of events from which to produce the example forms. Quiz with answers.

Lesson 9-AP: ACCES Preparation (60 mins)

An overview of effective data collection procedures (including ACCES application SOP, behavior in the TOC, shift change mechanics, etc.) to ensure consistency of observation. Includes VGTs and a student handout.

Instructors should be familiar with the ACCES methodology and experienced in ACCES applications; the VGTs accompanying the lessons expand on the material in the lessons, they do not duplicate it. Therefore a rote repetition of the lesson material will not cover all the material shown on the VGTs, and vice versa.

Student Population

This training material assumes that the candidate has a basic grasp of military map reading, the organization, equipment, and capabilities of US Army forces, staff organization and function, warfighting doctrine, and the acronyms and abbreviations in common use in US Army command centers.

Evaluation

Training effectiveness will be measured throughout the instructional period with quizzes.

Training Schedule

There is enough material to cover two days of training. The instructor should prepare his or her schedule and assignments to ensure that a brisk pace is set in the training. Wasting time during training is frustrating to the observers and usually means that important information will be omitted due to insufficient time. Training will normally include an introduction by the senior instructor. This will provide an opportunity to introduce the

observers to one another, including where they are from and what experience they have in command and control. The instructor will stress that this is an ACCES data collection TEAM. Every collector must act like a team member and assist others both in the classroom and in the field. Normally the senior instructor will briefly discuss the unit being evaluated and explain how the ACCES team fits into this application. The Course Introduction should also include the following highlights:

- The team members are guests of the unit being evaluated and there are certain ground rules that must be observed.
- ACCES has a tradition of being very good at evaluating the units and we expect this to continue.
- Safety is a crucial consideration at all times.

Each of the measurement category lessons includes a lecture and class discussion of examples, followed by a short quiz to gauge recognition of related ACCES events. It is suggested that the instructor allow at least 10 minutes for the completion, in-class correction, and discussion of each lesson's quiz.

In the afternoon of the second day of training, sufficient time should be allotted for the observers to visit the CPs in which they will be observing, introduce themselves, and explain what they will be doing. They should also have time to lay in the supplies they will need during their 12 hour watches.

Preparation for Training

To prepare for teaching this course, the 2 to 1 rule should be followed. That is, it takes two hours to prepare for every hour of class you will instruct. Therefore, the assignment to instruct the course involves a serious commitment.

Checklist for Instructors:

- familiarize yourself with each lesson
- produce the transparencies
- reproduce the student handouts and quizzes
- assess the physical facility
- acquire and possibly transport the overhead projector
- check security in the facility and courier orders as the tactical orientation may be classified
- check on local reproduction facilities
- ensure that a unit representative is available to give the tactical overview
- review the unit's SOP and its reporting schedule
- review the unit's automation.

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

What is C²?
Lesson Plan: C2

General

This lesson will provide the students with a common understanding of the Army command and control planning process, its doctrinal application and its relationship to a process measurement methodology, the Army Command and Control Evaluation System (ACCES) that will be applied during this exercise.

Time for completion: 60 minutes

Learning Objective

Task 1. Identify the components of the Army C2 process

Condition. Given the instruction, a working knowledge of FM 101-5, C² for Commanders and Staff, TRADOC Pam 11-9, Blueprint of the Battlefield, and student handouts

Standard. Students will achieve scores of at least 85% on a self-reported, criterion referenced post-test.

Method. Lecture and instructor-led discussions will be used to present the material.

Task 2. Relate ACCES measurement categories to the specific planning activities that are part of Army C².

Condition. Given the instruction, and an illustration of the ACCES model of C2 planning and the Command and Staff Estimate process detailed in FM 101-5

Standard. Students will achieve scores of at least 85% on a self-reported, criterion referenced post-test.

Method. Lecture and instructor-led discussions will be used to present the material.

Presentation GuideIntroduction(Display VGT C2-1)

Attention. The lethality, fluidity, and complexity of the modern battlefield require new models and methods for assessing essential command and control process skills. Effective command and control must be adaptable to changes in operating environments. Commanders and their staffs must perceive the temporal and spatial relationships among entities on the battlefield, they must be able to develop and maintain a common perception of the battlefield, and they must be able to accommodate change based on their perceptions. These conditions and requirements demand better methods of determining how headquarters demonstrate the tenets of AirLand Operations doctrine: mental and physical agility; the ability to seize initiative; the ability to conduct operations in depth, and the capability to synchronize battlefield actions. The aim of this instruction is to develop a context for collecting data that reliably describe C2 process performance and to introduce a collection methodology that can produce the quality and quantity of data needed to analyze command and control process performance. The

data collection supports assessments of process quality by measuring performance, responsiveness, and effectiveness associated with C2. Performance concerns the application of doctrine and procedures; responsiveness concerns the allocation and consumption of time within the C2 process, and effectiveness concerns mission accomplishment.

Motivation. During the upcoming days, you will have an opportunity to observe military command and control up close. (*Display VGT C2-2*) It is important that you be able to recognize elements of the process needed to plan, direct, and coordinate operations. This will require proficiency in a variety of skills: recognizing the performance; recording the relevant data; reducing the data for analysis; and reporting your observations to support measurement and feedback. This instruction provides a common context for the collection of data that enhances both the reliability of individual reports and the validity of the final report to the client organization.

Process measurements of this type must recognize that military organizations are open systems operating in dynamically complex environments. The C2 process is constantly adapting to uncertainty and other factors that interfere with the accomplishment of military objectives. We will employ three approaches to build the context for the application. First, we will summarize the doctrine, next we will discuss the material to establish a common framework for the observation and reporting, and finally, we will test and review the material to ensure a level of competency is achieved within the group .

Discussion

Joint Chiefs of Staff Publication 1-02 defines command and control as the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. We should elaborate on this definition for clarity. Command and control is a continuous process needed to plan, to prepare and rehearse, and to conduct military operations. (*Display VGT C2-3*) Command and control involves organizations, systems and procedures interacting within their operating environments to accomplish military missions. Participation in C2 involves a process of constantly collecting information, defining missions and supporting tasks, aligning perceptions based on feedback, formulating courses of action, deciding and implementing directives. What is a process? (*Display VGT C2-4*) A process is a time dependent series of tasks that are performed to accommodate change. Process is a means of organizing the work flow to achieve sustained efficiency and consistency of performance throughout the organization. Process permits organizations to deal with uncertainty and change that characterize dynamically complex operating environments. Each process consists of several components. These include:

1. the personnel who perform the process
2. the arrangement of personnel who perform the process into sections and functional areas
3. the relationship between each pair of cells, sections and functional areas.

4. the links to other processes that affect command and control.
5. the resources that are used and shared to perform tasks.

The commander "sees" the battlefield as a whole: the synthesis of several contexts. The combination of these contexts produces a continuously changing perception of the battlefield that redefines previous assessments and structures current estimates of the situation. Information contexts affect the accuracy of the battlefield picture and work to produce consistency in purpose and direction throughout the headquarters. Political and Operational contexts define the constraints and restrictions that bound the courses of actions and operations that will be performed. Technical contexts describe the dimensions of the battlefield and the rules or methods that can be employed to solve problems. Problems represent the gap between the ideal state and the perceived actual state which requires action. The command and control process recognizes the difference and suggests alternatives that remedy or reduce the problem. A high performing organization must deal with uncertainty efficiently and effectively. Military command and control processes must constantly adapt to change by sharing and exchanging resources, by acting in a timely, organized manner, and by structuring battlefield events in a synchronized fashion.

For the purpose of this application, our focus will be on the performances associated with planning because they can be observed as activities that take place using the command and staff estimate processes within military command posts.

Let's first evaluate the term "command and control". Does Command and Control represent one activity or is it two? What are the implicit assumptions concerning the measurement of command and control performance? Can we measure without evaluating performance? (*Display VGT C2-5*).

On paper, in the TOEs and other authorization documents, units are organized functionally. As units perform warfighting tasks, their structures become process- rather than functionally-driven. Warfighting and peacekeeping operations are planned and conducted by headquarters that use products generated by a variety of processes. General functional areas of responsibility, such as Personnel, Intelligence, Operations and Training, Logistics, and so forth are merely labels for grouping personnel, not for performing the essential warfighting, war planning and decision making tasks. The planning process depends on many process inputs from the Intelligence Preparation of the Battlefield Process, the Targeting Process, the Estimate Process, Information Collection and Dissemination Process, and many others. These and other processes become the bases for the high performing, learning organizations.

The methodology assumes that command and control processes are constantly evolving to accommodate changes in the political, technical, and organizational environments in which headquarters operate. The command and control process is affected by many variables, so analysts must understand the causal relationships and differentiate them from coincidence. Analysis requires reliable data collection that is focused on the data elements

that address specific measures of process performance. These measurements incorporate procedures and methods that reveal the quality of the observed C2 process.

The methodology reduces complex behaviors to a set of measures that can be quantified and arrayed on a scale. Meaningful assessments about process performance are produced and used to improve our understanding of performance. The ACCES methodology provides facts relating to how the process performed and why.

The methodology assumes that successful performance in military operations (battlefield outcomes) can not be solely attributable to effective (doctrinally and procedurally correct) command and control. The primary factors that contribute to the observable process outcomes are resources available, time available, and synchronization of events. Command and control process outcomes should be attributable to patterns of behavior that are achieved by long term training where adaptive behaviors are practiced, reported, and improved upon at all levels of the organization. Adaptive C2 behaviors describe how efficiently and effectively organizations accommodate change and accomplish their stated missions in the face of dynamically complex environments. These behaviors involve interdependent staff functions with many participants who are interacting to maintain a strategic direction in the face of constantly changing contexts.

Military operations are run by organizations that manage processes to achieve specific battlefield outcomes and future results. Operations are performed to accommodate change by achieving specific military objectives that are presented as mission statements. Several processes are performed concurrently. Each process is made up of a hierarchy of interdependent tasks. Of these major processes and functions, Command and Control (C2) is used to integrate and synchronize actions. C2 is composed of three distinct phases: Planning, Preparation and Rehearsal, and Execution. (*Display VGT C2-6*)

Planning. The formulation of direction, the assessment of environments, the development of alternatives, the selection of an alternative, the coordination and exchange of information, and the preparation of directives.

Preparation and Rehearsal. The dissemination of intent, the assimilation of directives, the arrangement of assets and resources, the interaction and control of staffs, and the modification of plans.

Execution. The initiation of actions, the modification of plans, the reporting of results and status, the attainment of objectives, and the culmination of action.

Command and control has several dimensions and perspectives. Command and control is a continuous process of gathering information, assessing situations, and developing as well as executing plans. Such a process supports the decision maker to develop and maintain a current picture of the battlefield. The process provides an organized framework for decision making that is necessary to synchronize battlefield events. Command and control provides the primary means for defining direction and purpose and for creating interfaces between commanders and their staffs. Current warfighting doctrine and the Blueprint of the Battlefield, illustrate how the

C2 process integrates performance across echelons at each level of war. Command and control is the synthesis of functions which are continuously interacting to direct, control, coordinate, and sustain operations. There are natural tensions within command and control that match the ability of commanders to lead with the need for staffs to regulate units, to monitor operations, and to support decision activities. These command and staff activities must be constantly balanced to ensure that the organization is capable of performing missions. (Display VGT C2-7) Interdependencies are created and must be recognized.

Command is the art of leadership and decision making normally associated with the commander, who is responsible for everything his units does or fails to do. (Display VGT C2-8) In practice, decisions are made by a number of individuals because the battle command problems are so complex and dispersed. Command provides a means for anticipating change and formulating concepts to respond to perceived change through the Command and Estimate Process which we will discuss later. Commanders must possess the ability to view problems holistically in order to assign priorities, assess risks, and assign tasks. A critical component of a commander's job is to visualize a future state and communicate his understanding as intent and guidance. He must be perceptive, a good listener, and an effective communicator. Effective commanders are required to deal with risks and uncertainty whenever they provide direction. They develop over time a sense of their critical information requirements and demand that their staffs provide the quality and quantity of information needed to make decisions. Because command is an art, we will observe it in many forms. Command style and techniques vary among individuals because of differences in education, training, and experience that shape command style.

Control is the science of producing accurate, timely, relevant information about the friendly and enemy situations to support decision making. (Display VGT C2-9) Control of military operations is provided by staffs that are organized in a manner determined by each unit. Initially, staff organization is based on functional requirements. Staff size varies based on the facilities available, the specified and implied tasks that make up the assigned mission, and the critical information requirements identified by the commander. An entire battlefield architecture is designed to satisfy information requirements. Staff task processes fall into two broad categories: defining limits and projecting change. In order to perform their work, staffs operate using prescribed interfaces and procedures. They constantly seek and update information holdings needed to assess situations and make recommendations. They perform a variety of tasks needed to identify variations, measure and analyze performance, and correct deviations. Effective staff performance is possible with proper prior training, a clear understanding of the commander's intent and the means to accomplish tasks. Control is necessary to translate decisions into actions and to make adjustments or modifications to plans.

Command and control consists of continuous and interdependent cycles of activities that take place at many locations. It is a process that may be characterized by high interdependence uncertainty. Interdependence uncertainty is a condition which exists whenever the organization lacks clarity of direction or purpose. For

example, commander's direction and guidance are not disseminated, are misunderstood, or are misapplied. Often, units conduct briefbacks as a means of reducing this form of uncertainty. The commander and staff participate in a planning process which requires accumulating facts and information from their operating environments. Information dissemination and gathering behaviors are used to develop a perception of the battlefield. A constant flow of information is used to update information holdings about the friendly and enemy situations. Information holdings are maintained in a variety of forms e.g., in electronic databases, in card files, on displays, and on maps. As the information holdings are assessed, an alternative perception of the situation is developed and subjected to an estimate process that operates to rationalize perceptions and align them with mission requirements. The information is assessed by the operations and planning staff and by the command group to understand the implications of change for the friendly unit. The commander formulates his intent and guidance and the staff forecasts possible future states based on this guidance. Both are by-products of assessment behaviors. The staff develops and analyzes alternative courses of action that can be implemented. The analysis produces a coordinated recommendation on the best course of action to accomplish the mission. The staff integrates constraints and restrictions imposed by its operating environments. The staff provides input directly to the decision process. The commander selects and may adapt an alternative based on his understanding and the staff's recommendations. The decision must be clear and unambiguous. It's the staff's responsibility to obtain clarification before it prepares a directive or plan, and coordinates its implementation. The staff disseminates the directive and monitors preparations, rehearsals, and implementation. As reports are received and processed, the staff updates the unit status and adjusts the plan to respond to opportunities or problems. The cycle then repeats itself.

Evaluation of command and control processes are too often outcome-based, comparisons of force ratios and losses. With the advent of distributed, computer-based, collective training systems, process measurements have become more widely used as an indicator of performance. Objective analysis of command and control performance depends on a number of variables. The key factors influencing performance are the training and preparation of the unit, the experience and qualifications of the commander and his staff, the resources available, and the battlefield architecture used during the training. The quality of C2 process performance reflects the understanding of mission, procedures, and assumptions that were used during the planning process within the organization. (Display VGT 2-10) At least three areas can be assessed to obtain reliable measures of performance. These include the abilities of commanders and staffs to:

1. understand the temporal and spatial relationships among entities throughout the area of operations.
2. develop and maintain a common perception of the battlefield across C2 nodes.
3. accommodate change.

Thus far, several points about command and control performance must be re-emphasized as we progress toward a measurement system that can be used by army staffs, hardware developers, and researchers. C2 is a

continuous process; it involves observable, complex, interdependent behaviors; it involves organizations, procedures and information; and, we can obtain qualitative and quantitative data that provide insights about process performance. The doctrine provided in FM 101-5, C² for Commanders and Staff, describes the mutually supporting roles of commander and his staff during the command estimate and planning process. The implementation of these roles may be explicit and easily observable, or implicit and difficult to observe. (Display VGT C2-11)

Lets walk through the doctrinal solution to the command estimate or planning process. This chart shows the parallel, supporting activities that take place to produce plans. The important outcome of this process is not the plan or directive, the artifacts that are produced, but the insights needed to synchronize effective battlefield actions.

Mission Received. The mission statement contains the job the unit is to perform. A mission statement conveys the WHO, WHAT, WHEN, WHERE and WHY of an operation. Once the mission is received, the commander and staff meet to initiate the planning process. Communication of mission and intent permits the unit to define the parameters of their decision problem. Mission statements will communicate the higher commander's intent and guidance, anticipated actions, and possible options. After a mission is received, the Chief of Staff is responsible for organizing and directing the staff's analysis of the mission. The Chief of Staff establishes when the staff analysis and inputs are needed. In some organizations, the G3 may assume this role.

Mission Analysis. Through mission analysis, the staff determines the specified and implied tasks, and identifies any constraints or restrictions. Constraints are requirements, limitations placed by the higher command, things the unit must do. Restrictions are things a unit must not do. The analysis also includes a statement of the higher commander's intent. This is important for constructing a conceptual framework that is consistent and implementable. Concurrently, the operations and intelligence staffs are developing and updating their assessments of both friendly and enemy situations. Other functional areas like logistics are performing similar updates.

The commander may conduct an independent mission analysis using information that has been provided by his higher commander or the staff. He uses these inputs to formulate his concept of operations. The concept of operations is a statement by the commander of his vision of how to defeat the enemy or accomplish the mission. It should also project where and how strong friendly forces will be after the mission. The concept of operations, when complete and clear, enables subordinate commanders to use initiative without jeopardizing the force or its mission.

Mission analysis includes the following elements:

- The purpose of the higher headquarter's mission. Understanding the WHY of the mission.
- The analysis of the concept of operations statement of the next higher commander.

- An initial time analysis to determine the allocation of planning, preparation and rehearsal, and execution times for subordinate formations.
- A review of the area of operations so the commander fully understands the overall concept of operations and how his unit will contribute to the successful accomplishment of tasks and missions.
- The tasks, specified and implied, that must be performed.
- The assets available, normally the task organization and combat support assets that can be brought to bear.
- The constraints or variables that require performance by the unit.
- The restrictions that limit options or alternatives available to the unit.
- The acceptable levels and types of risks that must be considered.

Lets discuss these items in more detail so we can all recognize them when they take place at your command post.

Purpose. A staff officer must know the intent of the commanders one and two levels up in order to plan. Therefore, unit directives contain intent that is consistent at two levels to ensure consistency and congruency across echelons. Intent is knowledge needed by subordinate commanders in order to develop a willingness and an ability to seize the initiative. A clear statement of purpose is needed to ensure that the overall concept of operations can be implemented at all levels of the organizations.

Time Analysis. Staffs must clearly identify time as an independent variable in the command and control process. Therefore, time must be regarded as a critical variable that affects the quality of C2 process performance. Time analysis is integral to all aspects of planning, especially the mission analysis and the synchronization functions. Time influences the identification of alternative courses of action, limits options that determine schemes of maneuver and task organization, and dictates how effectively units can practice initiative, agility, and operations in depth. Time analysis includes determining what time is available from the time the mission is received to the time the mission is to be completed. A complete time analysis must consider the portion of the decision cycle used to obtain required information and to process that information for use in revising estimates of the friendly and enemy situations, making a decision, and having subordinates initiate action. The allocation of time is prescribed in the doctrine to ensure there is sufficient time at each echelon to complete its C2 process: planning, preparation and rehearsal, and execution. Allocation is done through reverse planning sequences that provide for contingencies and changes. Most units use the "1/3, 2/3" rule. The rule allocates one-third of the available planning time to the headquarters and allows subordinate units the remaining two-thirds for mission planning, preparations, rehearsals, and execution. Warning orders are often used to initiate the planning

sequence at subordinate headquarters. It is expected that each echelon use the minimum time needed to plan an operation. Planning time sequences are initiated by receipt of a verbal or written directive and can be tracked.

Time analysis may also include consideration of the enemy's action or decision cycle. It is necessary to act in cycles that are more efficient than the enemy's to ensure we are able to seize and maintain the initiative.

In summary, planning time can be maximized when the unit issues Warning Orders, provides clear direction and guidance, and employs procedures that direct the flow of information to those who need it to plan. To eliminate ambiguity, units must also provide timely clarification to any queries.

Area of Operations (AO). The area of operations is that area portrayed in the Operations Overlay which include the terrain, objectives, and control measures for which the unit is responsible for maintaining or accomplishing. Paragraph 3 of the OPORD further describes the AO in terms of phase lines, geographic features or coordinates. The G3 displays the AO on its situation maps (SITMAPs) and ensures that it is available to other sections and nodes within the headquarters.

Tasks. Tasks are those functions which must be performed to accomplish the mission. Tasks are not routine, SOP requirements like establishing liaison, maintaining Main Supply Routes (MSRs) or inherent missions like Direct Support or OPCON. During the mission analysis, the commander identifies specified, implied and essential tasks. Higher headquarters orders contain specified tasks, normally in paragraphs 2 (Mission) and 3 (Concept of Operations). Implied tasks are derived through analysis of the specified tasks; they are not stated in the written or verbal directive. For example, an analysis of the mission to attack may include a requirement to perform a river crossing or to evacuate refugees from the AO. Essential tasks are those that are judged by the commander as critical to accomplishment of the overall mission.

Assets Available. The task organization provides a description of the command and control and supporting relationships among assigned and attached units that will be employed by the unit. These arrangements are normally reported in Paragraph 3 of the directive. In most operations, we will observe Task Force organizations that design the force around the combined arms capability and doctrine. Task forces are made up of many units or sub-units that are commanded and controlled to accomplish specific objectives. These assets may be redistributed after each phase of an operation.

Constraints. When higher headquarters impose limitations that constrain freedom of action there is an impact on the unit's planning process. These are typically objectives or tasks that a unit is required to perform such as maintain a "two brigade reserve", or specifying a "no-later-than" time.

Restrictions. Limitations that restrict or prohibit action, for example, "do not employ long term FASCAM," are restrictions. Restrictions have the effect of limiting freedom of action, but by exclusion rather than inclusion. For example, the screening force will not engage, or will withdraw with at least 80 percent strength.

Risk assessment. During the mission analysis, commanders assess the level and type of risk they are willing to accept to accomplish the mission. This guidance must be provided to aid the staff in coordinating, controlling and directing actions.

Each staff principal develops facts in his own area of interest. (*Display VGT No. C2-12*) The G1 or S1 is responsible for providing a current report on the personnel status of the organization overall, of subordinate units, and attached and supporting elements. Personnel status includes assessments of the following tangible and intangible factors:

- Unit strength maintenance.
- Replacements.
- Noncombat matters.
- Soldier personal readiness.
- Service support.
- Organizational climate.
- Commitment.
- Cohesion.

The G1 or S1 then projects current information, based on the current operation, into the future to estimate the status of personnel before, during, and after the planned operation.

On the battlefield, the G2's or S2's area of interest is a notional area, developed jointly with the G3 or S3, which is based on the commander's guidance. The area is dynamic in nature and can be measured in four dimensions -- depth, width, height, and time, which cannot be fully represented on a map. The area includes all mission, enemy, terrain, troops, and time available (METT-T) factors capable of affecting the unit's operations in the near future. It is at least as large as the area of operations and is normally somewhat larger.

The G2 or S2 appraises two views during terrain analysis -- operational and tactical. In the operational view, each level of command must appraise terrain information to gain an overall view of the battle and how it pertains to their own level. The operational commander and staff must fully realize the opportunities and limitations of major terrain features, transportation networks, and built-up areas within the battle area; they must be able to fit their operational concept into the battlefield environment.

In the tactical view (using portions of the Intelligence Preparation of the Battlefield [IPB] process), the staff evaluates the military aspects of the battlefield terrain (such as, observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach) so the commander can "read the battlefield" and make proactive decisions. During analysis, the G2 or S2 and the G3 or S3 use the area of interest to identify from where to collect needed intelligence.

Terrain analysis gives a variety of information for planning within the headquarters (battalion through corps). The most important information pertains to the avenues of approach (both ground and air) for both friendly and enemy uses. This is the information on which the unit will focus to plan its operation.

Weather is a major factor affecting both personnel and all battlefield systems. Weather and visibility conditions create advantages and disadvantages for opposing forces. The commander and other staff members must acquire weather information about the entire battlefield area. The staff must know how to exploit the opportunities weather offers while minimizing its adverse effects.

The G2 or S2 is responsible for gathering information concerning the enemy. The G2 or S2 must:

- Plot and maintain known enemy units and locations within the area of interest, including committed, reinforcing, and supporting forces.
- Develop the enemy order of battle.
- Prepare a summary of known enemy weaknesses and peculiarities that will favorably or unfavorably influence his combat effectiveness.
- Identify known enemy activities and capabilities that might affect future operations.
- Summarize the enemy's recent and present activities for indications of future actions.
- Project enemy dispositions before, during, and after the operation being planned.

The G3 or S3 must be aware of:

- Current task organization (two levels down).
- Current unit status. This information consists of unit locations, unit combat capabilities (including level of training, effectiveness of command and control, degree of mobility, type of equipment, availability of nuclear or chemical ammunition, limitations), and unit activities.
- Future plans.
- Sister service combat support available (air support, naval gunfire, marine assets).
- Other unit information; such as, location, status, and mission of flank units, supporting units, and higher headquarters uncommitted units.

The G4 or S4 provides an accurate and current assessment of the logistic situation of the organization, subordinate units, and attached and supporting elements in several functional areas:

- Maintenance
- Supply
- Services
- Transportation
- Labor
- Facilities and construction

The G5 or S5 provides a current assessment in the following functional areas:

- Government functions
- Economic functions
- Public facilities functions
- Special functions

Civil affairs unit locations and capabilities and preclusion area information are also provided.

Assumptions. After identifying available facts, the staff develops assumptions to replace necessary but missing facts. The staff may also need to provide assumptions for facts which may have changed between the time the unit received the mission and the time of execution; the greater the time difference, the more likely the facts will change.

The following describes the functions of the principal staff members during the development process.

The G1 or S1 must consider the personnel factors for each course of action. The G1/S1 then makes assumptions about those which will change with time.

The G2 or S2 is responsible for providing the following data:

- Terrain. Assumptions about terrain might include possible best avenues, best defensible ground, the proposed forward edge of the battle area (FEBA) or line of departure (LD), and the effects of terrain on broad enemy and friendly courses of action.
- Weather. Consider the potential effects of forecast weather on friendly and enemy operations.
- Enemy forces. Through the intelligence preparation of the battlefield (IPB) process, the G2/S2 will:
 - Develop the situation template based on known enemy location and activities, terrain analysis, and the doctrinal template.
 - Determine enemy capabilities that could affect friendly operations. As a minimum, include electronic warfare, counterintelligence threat, artillery, air defense artillery, aviation, and NBC capabilities.
 - Develop as many enemy courses of action as planning time will allow. This will lead to identifying the enemy's most probable course of action. (At higher levels of command, the identified courses of action are more extensive.) The identification of enemy courses of action becomes the basis from which to analyze friendly courses of action branches and sequels.
 - Develop an event template and start planning to collect information at designated named areas of interest (NAIs). (Coordinate this with the G3 or S3.)
 - Develop a decision support template. Coordinate target areas of interest (TAIs) development with the fire support element (FSE) and the G3 or S3.

- Enemy vulnerabilities.
- Friendly capabilities, including:
 - Status of intelligence support.
 - Organic and supporting collection assets.
 - Effects of intelligence considerations on possible operations.
 - Effects of the area of operations on possible courses of action.

NOTE: To have a firm understanding of the enemy and to be able to plan and operate inside the enemy's decision cycle, the entire staff must anticipate the enemy's objectives and intentions. The intentions should include an assessment by the G2 as to the possible and probable use of NBC weapons.

The G3 or S3 makes assumptions about the status of the unit at the time of the operation. They also make assumptions about the general ability of the unit to conduct the mission. The G3/S3 is responsible for providing data on:

- Status of maneuver units.
- Status of combat support units, including:
 - Fire support units; such as, tactical air support, field artillery (including nuclear and chemical capabilities), sister service support, and target acquisition assets.
 - Air defense support, including organic and supporting assets and coverage, Army Airspace Command and Control (A²C²), and Air Force support.
 - Chemical support, including decontamination assets and offensive support.
 - Engineer support, including mobility, countermobility, and survivability.
 - Electronic warfare (EW) support, including organic and supporting offensive EW assets, remotely piloted vehicles (RPVs), control launch recovery sections, and forward control sections status.
 - General aviation support (less combat elements).
 - Military police (MP) capabilities, including traffic control along main supply routes (MSRs), security for enemy prisoners of war (EPWs), rapid response in rear area operations, and security for tactical operations centers (TOCs).
 - Signal capabilities, including mobile subscriber equipment (MSE) nodes, tactical satellite (TACSAT) transmissions, and multichannel communications.

The G4 or S4 must be aware of the significant differences between the current logistic status in the area of responsibility and the anticipated status of the organization at the time the operation begins. They identify current logistic status from the logistics estimate.

The G5 or S5 must consider the future status of the factors in the subject area that could have an impact on the contemplated operation. Such factors include:

- Locations and capabilities of civil affairs units.
- Local government support available or lack of control by the local government.
- Constraints or restrictions in civil-military operations (preclusion areas, for example).

ACCES description. The conduct of training exercises provides opportunities to observe C2 performance and to collect data about the nature of the process. Unstructured or unfocused observations produce data that are unusable and fail to describe the performance. As a result, ACCES was developed to provide a framework for observing and reporting command and control process performance. The ACCES measures describe the behaviors associated with the planning process and identify the key data elements that must be collected to assess that process.

What is ACCES? ACCES stands for the Army Command and Control Evaluation System. The ACCES methodology provides a systematic approach for observing and reporting C2 process performance. ACCES has been developed and refined over several years to improve the quality and quantity of information needed to understand the complex behaviors that make up command and control. Its antecedents were developed under the auspices of the Army Research Institute and the Defense Communications Agency to obtain performance measures for C2 analysis.

ACCES is a methodology for non-participant observation of C2 processes. The methodology assumes that the behaviors that make up command and control are doctrinally-grounded. Because the individual and collective behaviors can be traced to the doctrine, it is possible to observe and discriminate among the behaviors for measurement and evaluation. However, other theories apply to the research and study of command and control. Theories of group structure, systems, and adaptive control behaviors have been combined to study military command and control. An understanding of warfighting doctrine and staff procedures alone is insufficient for performing the data collection task. Therefore, besides a working knowledge of the doctrine, each observer should have proficiency in recognizing the performance that's being measured, recording the data elements that describe the behaviors, and using the appropriate tools and instruments to reliably report on these behaviors.

ACCES describes the individual and collective behaviors, and identifies the data elements that must be collected to provide accurate measures of process performance. An ACCES application requires Data Collectors to observe C2 performance, to record their observations, to reduce raw data using the appropriate data collection form, and to process their forms for use by Analysts. Analysts use the reduced and raw data obtained by Data Collectors to develop a chronology of events, to calculate measures and to analyze process performance. In the context of command post and field training exercises, ACCES analysts and independent evaluators use the measures to assess value-added and system performance. Therefore, the ACCES training is designed to produce reliable and valid data collection. Throughout the application, data collection activity should be continuously monitored to ensure that high quality and internal consistency are maintained. These are vital components for

supporting analysis and the unit's decision making concerning performance that should be sustained or improved. ACCES measures can also be used by doctrine, training, and combat developers to enhance the effectiveness and efficiency of command and control.

This chart depicts the interdependent behaviors that are part of the C2 planning process. (Display VGT C2-13) The model illustrates the logical flow of information and collective behaviors that make-up a normal C2 planning process. Each of these will be discussed in greater deal and you will receive instruction on each category of measurement during the remainder of this week. Let's review the model.

A number of assumptions are needed to understand the ACCES view of the C2 process. Command and control is part of an open-system that is constantly adapting to changes in its operating environments. (Display C2-14) Performance in a C2 system is doctrinally grounded. Performance and processes are interdependent. This means that there are cause and effect relationships that must be identified to fully explain outcomes. These operating environments represent the larger context provided through directives from higher headquarters, political infrastructures, the factors of METT-T, and inputs and feedback from lower, adjacent, and constituent C2 nodes (TAC, MAIN and REAR command posts). This is a dynamically complex milieu that requires constant monitoring and well planned responses. In computer-based simulations like those used in Battle Command Training Program (BCTP) exercises, these environments are produced and maintained by the Corps Battle Simulation (CBS).

ACCES includes 6 categories of process measures that parallel the behaviors that make up the command and control process. Each of the behaviors may be directly influenced by inputs from the command group while it is taking place. Sometimes the behaviors are not evident because the commander opts to use a shortcut that bypasses a step. For example, he may implement a contingency and bypass the analysis of courses of action. Nevertheless, discernible behaviors can be observed and recorded for analysis. Each of these measurement categories will be discussed in detail during the succeeding lessons. The interdependence can be illustrated using a systems approach that depicts the inputs, processes, and outputs that constantly operate. (Display VGT 2-15)

Information Handling (IH) behaviors are represented by unit efforts to scan or interact with operating environments to update or verify its information holdings; these involve incoming and outgoing transfers of information. Information holdings are essential to the development and maintenance of a common picture of the battlefield, both the friendly and enemy situations. The activity associated with these behaviors includes formal and informal reporting, queries, and information exchanges. Evidence of Information Handling behaviors is obtained from monitoring communications, observing status boards, reading incoming and outgoing reports and perusing message journals. The C2 process is sustained by the acquisition and dissemination of accurate, timely, relevant information needed to support planning and decision making within the headquarters.

Situation Assessment (SA) behaviors are represented by unit efforts to understand or assign meaning to the information about the friendly or enemy situation. The Situation Assessment behaviors are essential for problem identification. The ability to define problems in terms of military objectives is a prerequisite for action. Once the commander or staff senses an imbalance between the unit and its environment, the planning process accelerates and continues. Evidence of Situation Assessment behaviors is obtained from observing formal and informal settings where understandings are expressed. Assessments involve perceptions and are frequently expressed as beliefs, forecasts, or predictions. The doctrine requires that formal assessments address specific factors for enemy and friendly forces. These factors are a key element of this measurement category and will be discussed in detail during later lessons. Situation Assessments often provide a trigger event that stimulates command and control process performance.

Course of Action Analysis (COA) behaviors are represented by unit efforts to identify and recommend a preferred option or alternative for accomplishing the assigned task or mission. It is a process normally involving mission and situation analysis, option development, and wargaming across functional areas. The process is normally led by the Chief of Staff in the plans area of the command post. Evidence of Course of Action Analysis behaviors is obtained from monitoring the decision briefings at the initial stages of the command estimate process, observing the Plans Cell throughout the analysis, and observing the presentation of recommendations to the decision maker. The COA analysis often extends over long periods of time and may involve numerous staff perspectives, or it may happen quickly at the Division TAC with a minimum of staff and/or time. While there are no standard criteria for weighting COAs, there are common factors that should be considered when recommending a COA. These COA doctrinal requirements are important for assessing the quality of the C2 process. Elements of COA Analysis will be discussed in detail during later instruction.

Decision Context (DC) behaviors are represented by the selection of a COA by the decision maker. ACCES does not judge or evaluate the decision. This measurement category provides details needed to reconstruct what was decided, by whom and under what conditions, and to relate behaviors to specific decision cycles. This information is used to define major and minor decision cycles. Overall process measurement quality can be measured by examining the variables that contributed to the decision and tracking its implementation throughout the unit. These insights are gained by looking at perceived and ground truth at the time of the decision. Evidence of Decision Context behaviors is obtained from observing decision makers, recording activities associated with decision making and identifying when an option is selected. Decisions are critical for defining cycles and patterns of performance within the headquarters.

Preparation of Directives (PD) behaviors are represented by the development of directives that communicate to higher, lower, and adjacent formations the decision including intent and guidance. The timeliness, completeness, and accuracy of directives ensures continuity of operations. Directives can be disseminated in an oral or

written form. They provide important insights about the ability of the staff to disseminate decisions. Directive preparation, like COA Analysis, may span long periods and involve many staff inputs. The results of these observations will have to be synthesized from the observations of several Data Collectors in order to obtain a clear understanding of performance. Evidence of Preparation of Directive behaviors is obtained from recording the decisions, observing the directive preparation and dissemination activities, hard copies of written directives, message logs, and tracking the movement of directives at each echelon of the command. The ability to communicate directives is critical to the conduct of military operations.

Information Exchange (IE) behaviors (consisting of Coordination and Information Seeking) are represented by the unit trying to synchronize battle field events or to complete information holdings in conjunction with decision making activities. Coordination occurs within and between Battlefield Functional Areas and C2 nodes almost continuously. Coordination is shown as an input to each of the preceding processes. ACCES measurement captures data about the timing and content of coordination. Units that complete coordination tend to be higher performing organizations that are more adaptable. Evidence of Information Exchange behaviors is obtained from monitoring requests for clarification, observing staff actions to harmonize or synchronize change on the battlefield, and tracking requests from decision makers to determine whether they follow-up or close the loop. Coordination is an indicator of staff proficiency and understanding.

Experience has shown that it is not necessary that this C2 performance sequence be followed in order to initiate or complete a C2 cycle. Often, there are contingencies in place, or actions are taken that by-pass the formal Situation Assessment or COA Analysis steps. Time and the situation just won't permit the commander to explicitly go through the process. (*Display VGT C2-16*) When shortcuts or other expedients are used, like "trigger events" or other contingencies, the process is truncated.

Conclusion

(Display VGT C2-17)

C2 is complex because it involves open systems that are trying to adapt to dynamically complex operating environments. Attributing cause and effect relationships based on battlefield outcomes alone is insufficient for describing C2 process performance. Staff organization, staff functions, procedures, command style and doctrine all contribute to the C2 process performance. Effective command and control produces a high performing, learning organization that is capable of efficiently adapting to changes in its operating environments while remaining productive. Command and control operates with products developed through various supporting processes. These processes share interdependencies that must be managed to prevent process maladaptations. Effective command and control doesn't just happen. It requires the conscientious application of doctrine that is reinforced through training and teamwork. The ultimate measure of C2 effectiveness is the ability of the unit to

apply its combat power more effectively than the enemy at the decisive time and place on the battlefield to accomplish military objectives. The doctrine defines four tenets of performance: Agility, Initiative, Depth and Synchronization.

ACCES was developed in order to understand how the C2 process is performing. ACCES is an approach to process measurement that requires a team of Data Collectors and Analysts who are focused on the collective behaviors that make up C2. The observation of C2 process performance requires a framework for producing reliable, valid data that describe decision cycles in terms of collective behaviors. ACCES provides a means to capture important data about command and control. (Display VGT: ACCES Model) ACCES permits the analyst to segment the performance into six measurement categories that parallel the C2 process based on collective, observable behaviors. The training that follows will highlight individual data elements, their sources and the appropriate means of recording data for analysis. (Display C2-18)

Any questions? If not, I am passing out a self scored test on C2. Take a few moments and respond to each item. Afterwards, we'll discuss your responses and distribute a summary of Command and Control for your review.

QUIZ

for

"What is C2?"

True-False

- ___ 1. The command and control process and the command estimate process are the same.
- ___ 2. The G3 directs the staff estimate process.
- ___ 3. To ensure the best planning, a unit should use all the planning time available before passing the mission to a subordinate unit.
- ___ 4. The commander must personally approve all plans and orders.
- ___ 5. The commander and staff must understand the intent of the commander at least two levels above.

Matching

(Fill in the letter from the list a through g corresponding to the correct answer)

- 6. The ___ projects current information, based on the current operation, into the future to estimate the status of personnel before, during, and after the planned operations.
 - a. Commander
 - b. Chief of Staff
 - c. G1
 - d. G2
- 7. The ___ provides a current assessment on the government and economic functions of the host nation.
 - e. G3
 - f. G4
 - g. G5
- 8. All staff activities are coordinated by the ___.
- 9. The ___ decides on the course of action.
- 10. Providing data on the status of maneuver units is the responsibility of the ___.
- 11. A situation template is developed by the ___.
- 12. The ___ is responsible for providing the current logistics status.

Fill-In

(with appropriate word or phrase)

- 13. Upon receipt of a new mission, the G3 will normally issue a _____ to subordinate units.
- 14. A _____ may be used to modify or change an OPORD.
- 15. The process through which the commander and staff interact to execute tactical decisions and to synchronize battlefield activities is the _____ process.

ANSWER SHEET

for

Quiz: What is C2

1. F
2. F (The CofS directs the staff estimate process.)
3. F (A unit should use a maximum of 1/3 of the time available for planning time.)
4. F (Subordinates are assigned to approve plans and orders.)
5. T

6. c
7. g
8. b
9. a
10. e
11. d
12. f

13. warning order
14. FRAGO
15. command and control

STUDENT HANDOUT (Extract from BCTP ARTEP Analysis)
for the Lesson "What Is C2?"

Division Headquarters Information System

Commander Functions. A command and control system is usually described as a combination of people, equipment, procedures, and facilities used to support the information flows and processing requirements of the commander in the performance of his job, i.e., the conduct of combat operations. The divisional command and control system provides the information and decision making support the division commander needs to accomplish the range of missions that his division could receive. Thus, in a very real sense the commander is the director of the division information system. In combat, the commander must sense the situation, understand it, consider it, decide what to do about it, implement his decision, and supervise its execution. While the series of things the commander must do appears rather straightforward as stated, it is necessary to elaborate this list somewhat to establish his functions. From an information system point of view, the functions that the division commander performs during combat operations are postulated as: evaluate the combat situation, formulate operational concepts, and implement (and direct) the operational concept. Evaluate includes sense and understand, formulate includes consider and decide, and implement is synonymous with execute. As shown in Figure 1, below, initially the evaluation function precedes formulation (or reformulation) which in turn precedes implementation.

Notably, after a brief start-up period prior to execution of the initial operations order, each commander function occurs continuously and generally in parallel with the others. During implementation the commander

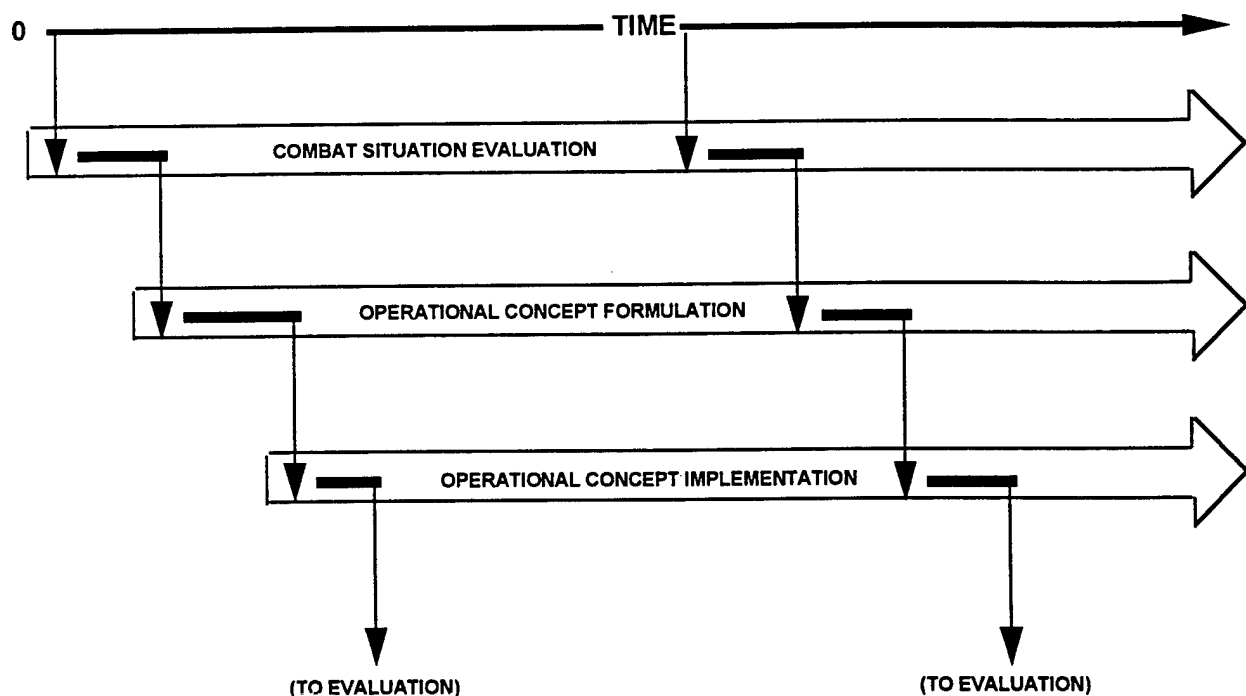


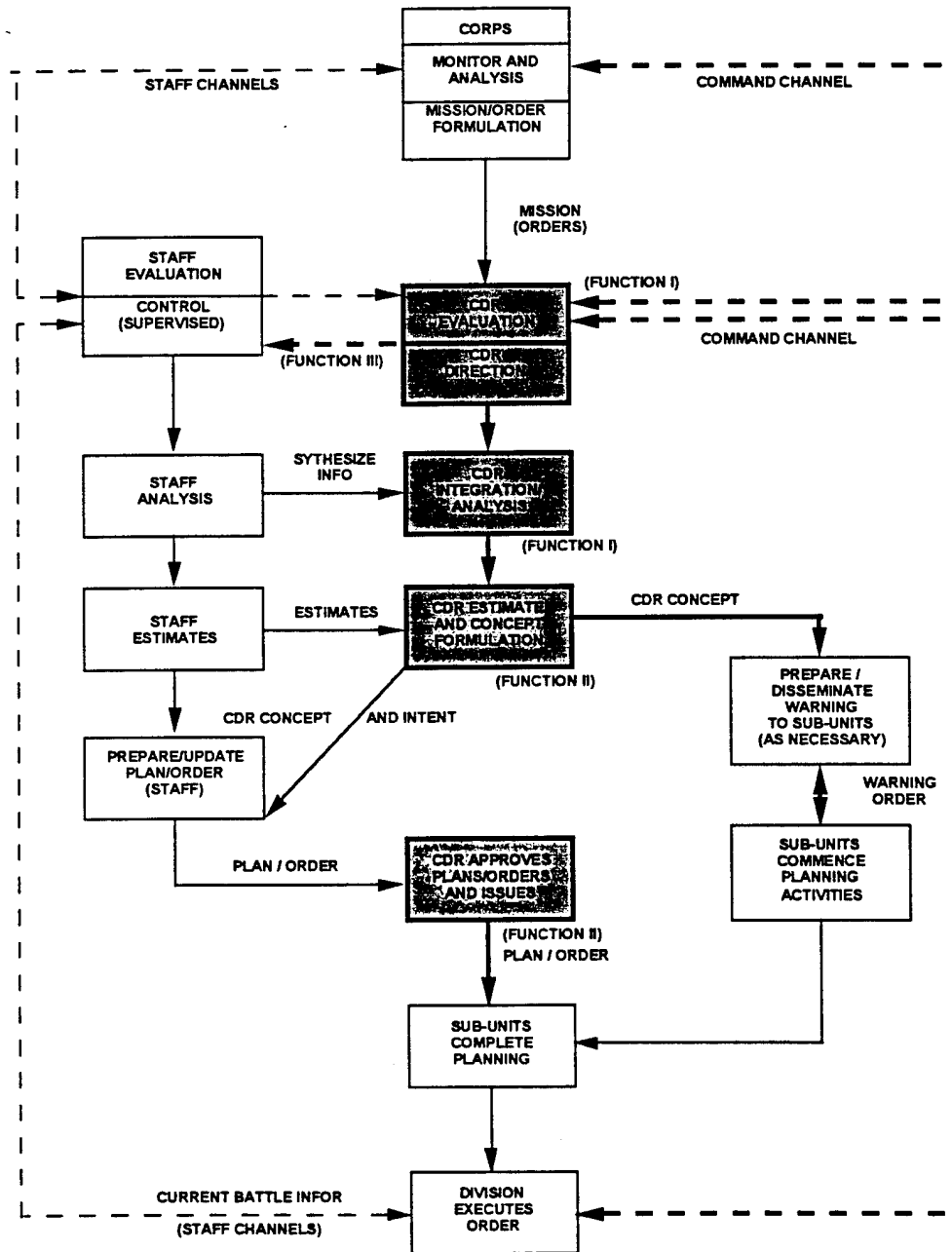
Figure 1. Parallelism of Division Commander's Functions

supervises execution of the operations order and simultaneously evaluates the progress of the operation versus his plan. He further performs continuous "commander estimation" and "reformulates" his operational concept if required. In reality, these functions tend to become blurred into one during the battle. Given this overview at the functional level, we have further defined the commander's major tasks as shown in Figure 2. The intent here is not to prescribe tasks for the division commander per se, but to establish clearly and concisely the functions and tasks to be accomplished at the top level of the information system (command and control system).

COMMANDER FUNCTION		COMMANDER TASKS	
C1	COMBAT SITUATION EVALUATION	C1.1	Evaluate and integrate staff inputs
		C1.2	Evaluate and integrate command channel inputs
		C1.3	Integrate personal observations of division sector/zone
C2	OPERATIONAL CONCEPT FORMULATION	C2.1	Perform continuous command estimation
		C2.2	Provide current and foreseeable future battle concept guidance (operations and sustainment) to staff
		C2.3	Approve plans, orders, and fragos
C3	OPERATIONAL CONCEPT IMPLEMENTATION	C3.1	Assign missions and issue orders to subordinate commands
		C3.2	Direct staff emphasis
		C3.3	Re-allocate resources (as required)
		C3.4	Observe and direct operations in division sector/zone

Figure 2. Division Commander Functions and Tasks.

A view of the division commander's functions and the macro-level information flows associated with their accomplishment are shown in Figure 3. This schematic also shows staff participation (and staff functionality at the highest level of generality). The commander's functions are shaded. It is not our intention to convey a step-by-step, mechanistic information processing system, but rather to describe the system's form while fully recognizing the enormous "parallelism" of information flows and resultant ultra-dynamic processing requirements.



Functional Groups. The preceding paragraph postulated and further described the functions of the division commander. In an effort to continue the description of functionality in the division headquarters and specifically that supporting the commander, we have established the functional staff groups as shown in Figure 4.

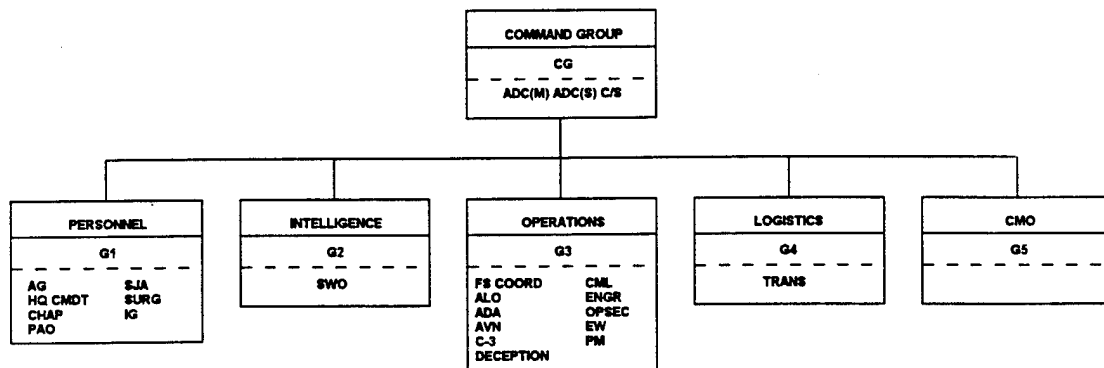


Figure 4. Functional Groups

These functional groups, while not indicative of the formal coordinating and special staff relationships per FM 101-5, are programmatic classifications from the standpoint of functional support to the commander in combat. Thus, these functional groups form the basis for the systemic portrayal of the battle information process and system within the division headquarters. Functions/tasks, hierarchical breakdowns, and systemic descriptions (interrelated components and information flows) for each functional group are included in subsequent sub-paragraphs.

Personnel (G1). The G1 Staff functions should logically support those postulated for the division commander. In order to promote logical consistency and strict semantic discipline we have further postulated, based on a synthesis of doctrinal reading and experience, G1 functions as shown in Figure 5. As noted on the figure, we find that a substantial part of the personnel functions are not directly related to the combat operation and are done "off-line".

FUNCTIONS		G1 TASKS	
P1	UNIT STRENGTH MAINTENANCE*	P1.1	Perform division strength accounting and estimate strength projection (AG)
		P1.2	Supervise replacement process
P2	PERSONNEL SUPPORT FOR OPERATIONS/PLANS*	P2.1	Perform continuous personnel situation estimation
		P2.2	Prepare personnel para of a/l annex to plans/orders
P3	PERSONNEL SERVICES SUPPORT SUPERVISION**	SUPERVISE:	
		P3.1	Admin Support (AG)
		P3.2	Casualty Reporting Support (AG)
		P3.3	Postal Services Support (AG)
		P3.4	Financial Services Support (AG)
		P3.5	Religious Services Support (CHAP)
		P3.6	Legal Services Support (SJA)
		P3.7	Health Services Support (SURG)
P4	MANAGEMENT SUPPORT SUPERVISION**	P3.8	Public Affairs Support (PAO)
		P4.1	Supervise headquarters management (HQ CMDT)
		P4.2	Provide safety and accident policy/procedures (G1)
P5	DIVISION PERSONNEL SYSTEM DEVELOPMENT AND DIRECTION**	P4.3	Supervise discipline, law and order policy/procedures (G1/SJA/PM)
		P5.1	Establish (maintain) personnel system
		P5.2	Monitor/evaluate personnel system

* Direct support to combat operations

** Indirect support to combat operations

Figure 5. Personnel Functions.

Figure 6 depicts functional flows and hence relationships (direct and indirect) between G1 and the commander. While the commander's job is to conduct combat operations, there are some "off-line" administrative decisions that he, as the chief executive officer of the division, must take.

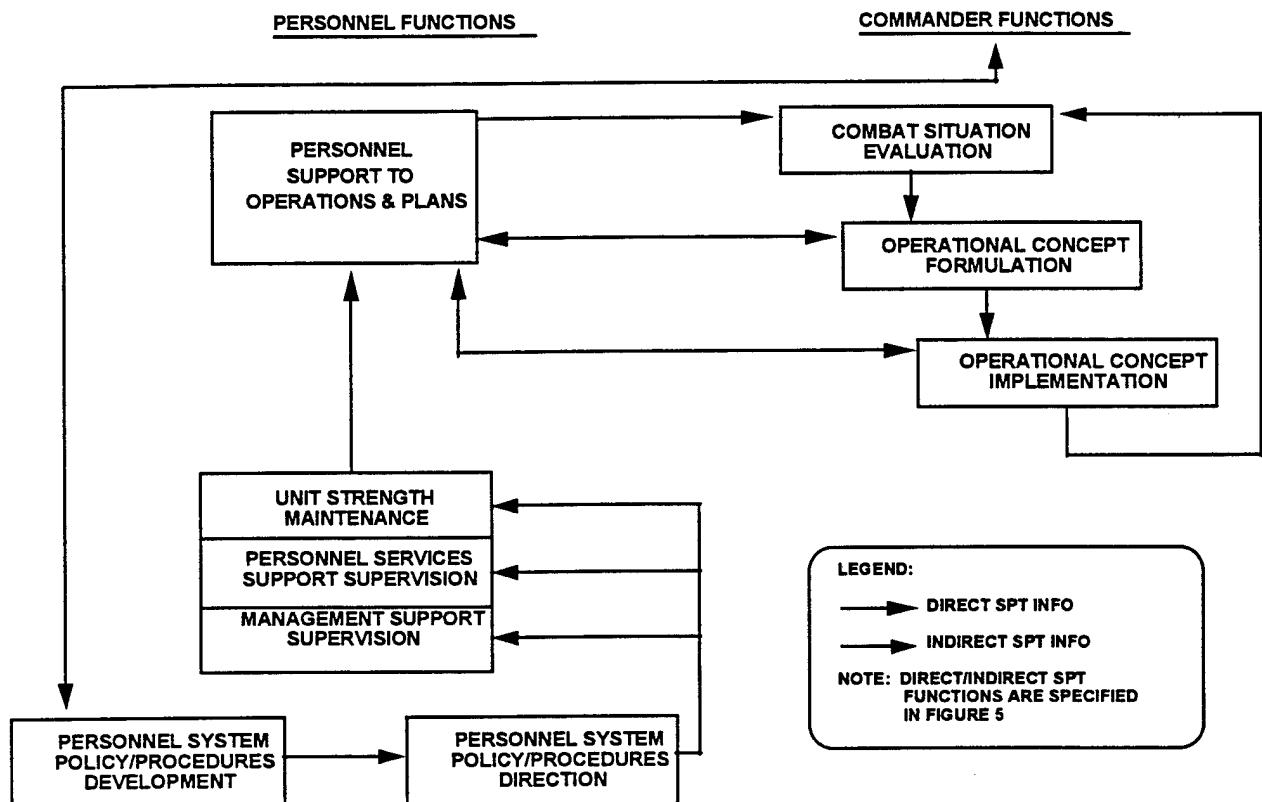


Figure 6. G1/Commander Functions and Interrelationships.

Intelligence (G2) Functions. As with the G1, the G2 staff functions should logically support those of the division commander. Also, to the extent that the G3 performs the same generic functions as the commander (albeit not the same tasks), the G2 functions also support the G3. For the same reasons (logical consistency and semantic discipline) stated in the G1 functional description above, we have postulated, based on a synthesis of doctrinal readings and experience, G2 functions as shown in Figure 7. G2 functions differ in number and analytical content from other staff functions for two principal reasons. First, the substantial complexities associated with collection of enemy information, specifically the optimal use of scarce collection assets against specific needs for information about the enemy, make the G2 collection activities pronounced to the point where collection is a function, arguably the G2's most important one. In other staff sections, collection of information from friendly elements is by comparison a "routine" part of evaluation. Second, the information that the G2 receives to develop the intelligence estimate is "highly probabilistic" and thus requires substantial effort to define the resultant uncertainty for decision making purposes. Conversely, personnel or logistics status information should approach certainty in a disciplined division.

FUNCTIONS			G-2 TASKS
I1	COMBAT SIT EVAL/ SYSTEM DIRECTION	I1.1	Monitor/evaluate division combat operations
		I1.2	Direct division intelligence system
I2	INTELLIGENCE PRODUCTION	I2.1	Produce intelligence
		I2.2	Develop intelligence collection requirements
I3	INTELLIGENCE COLLECTION	I3.1	Prepare intelligence collection plan
		I3.2	Execute intelligence collection plan
I4	INTELLIGENCE SUPPORT FOR FUTURE OPNS	I4.1	Prepare future battle EN SIT estimate
		I4.2	Prepare intelligence annex to plans/orders

Figure 7. Intelligence Functions.

Figure 8 shows the functional flows and relationships between G2 and the commander.

Operations (G3). As with the G1 and G2, the G3 staff functions should logically support those of the

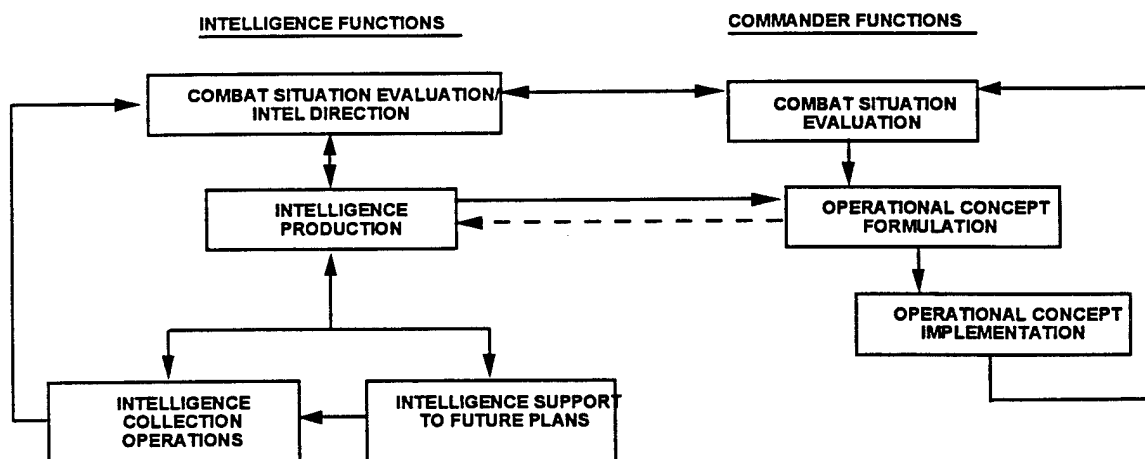


Figure 8. G2/Commander Functions and Interrelationships

division commander. Of interest here is that the G3's functionality is identical to that of the commander at the functional level (Figure 9).

FUNCTIONS		G3 TASKS	
O1	COMBAT SITUATION EVALUATION (CURRENT AND PROJECTED)	O1.1	Maintain staff interfaces
		O1.2	Evaluate and integrate command/opns channel and staff inputs (higher and lower)
		O1.3	Maintain operational situation information
O2	OPERATIONAL CONCEPT FORMULATION	O2.1	Perform continuous operations estimate
		O2.2	Produce integrated operations decisions, plans, orders, and fragos
		O2.3	Perform continuous future operations estimate
		O2.4	Produce integrated decisions, opords, oplans
O3	OPERATIONAL CONCEPT IMPLEMENTATION DIRECTION	O3.1	Issue orders to command and staff
		O3.2	Direct the operations system
		O3.3	Modify task organization and priorities (as required)

Figure 9. Operations Functions.

The differences between the commander and G3, principally in authority and level of detail, appear at task level. For comparison purposes, Figure 2 shows the functions and tasks of the commander. In essence, the G3 acts as the commander's primary information synthesizer and advisor for operational concept formulation, order preparation and implementation. Within the bounds of actual or perceived competency, the G3 may be granted wide latitude to take actions on behalf of and for the commander in the latter's absence or other circumstances as agreed. In this context, there are three broad categories or classes of actions for the G3:

- Those on which he is expected to act without further reference to the command group.
- Those on which he must (and is expected to) take immediate action, informing the command group of the reasons for and action taken as soon as practical after the fact.
- Those actions reserved for command alone by practice, statute, or regulation and on which he is required to recommend but may not act per se.

Figure 10 shows the G3 and commander functional interrelationships.

Logistics (G4). As with the other staff, the G4 staff functions must logically support those of the division commander. Once again we have postulated, based on a synthesis of doctrinal reading and experience, G4 functions as shown in Figure 11.

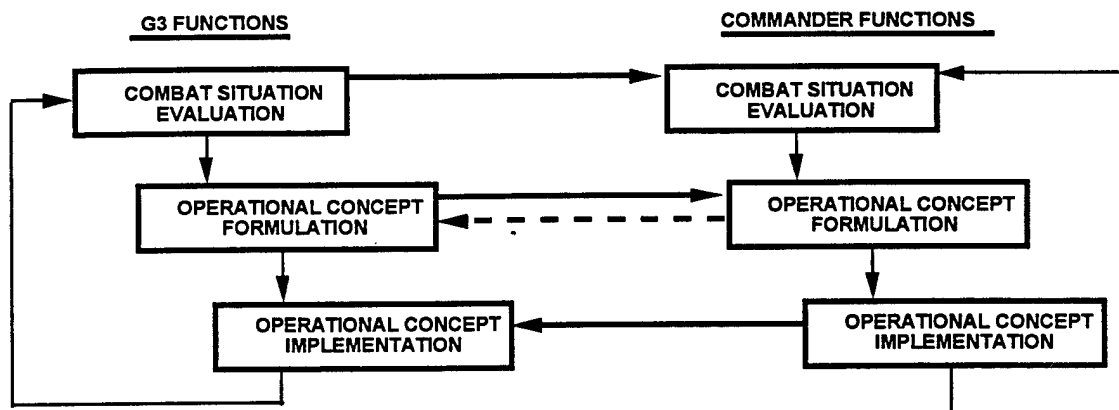


Figure 10. G3/Commander Functional Interrelationships.

	FUNCTIONS		G4 TASKS
L1	LOGISTIC SITUATION EVALUATION	L1.1	Integrate supply status inputs
		L1.2	Integrate weapon system and other maintenance status inputs
		L1.3	Integrate service support requests
		L1.4	Integrate transportation support requests
		L1.5	Monitor combat situation
L2	LOGISTICS ESTIMATION AND PLANS DEVELOPMENT	L2.1	Develop logistic estimate of situation
		L2.2	Develop logistic plan for operations concept
		L2.3	Prepare logistic annex to plans/orders; admin/log orders
L3	LOGISTIC PLANS IMPLEMENTATION (ADJUSTMENT)	L3.1	Direct logistic system (supply, maint, trans, services)
		L3.2	Adjust logistic priorities
L4	INDIRECT LOGISTIC SUPPORT SUPERVISION	L4.1	Plan and coordinate construction
		L4.2	Collect/dispose of excess property
		L4.3	Acquire, administer, dispose of real estate
		L4.4	Coord logistic budget planning and monitor expenditures
		L4.5	Develop requirement for use of non-U.S. military personnel to support logistics operations

Figure 11. Logistics Functions.

Figure 12 depicts the functional flows and hence relationships between the G4 and the commander.

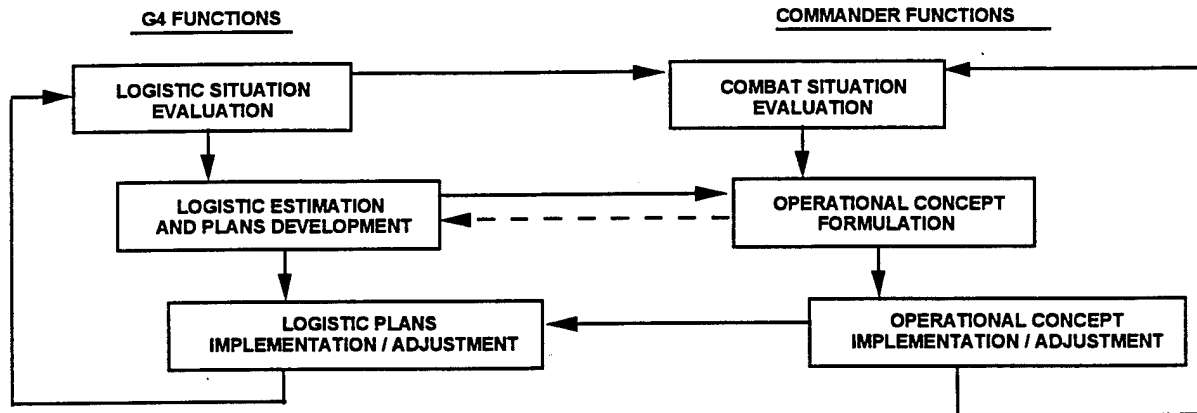


Figure 12. G4/Commander Functional Relationships.

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Introduction: What Is ACCES?

Lesson Plan: WA

General

The lesson will provide the student with an understanding of the Army Command and Control Evaluation System (ACCES), its use as a measurement methodology, and its purpose.

Time for completion: 60 minutes.

Learning Objective

- Task: Identify the components of the ACCES methodology.
- Condition: Given the ACCES Program of Instruction, the ACCES data collection forms.
- Standard: The observers will achieve scores resulting in 85% correct responses.
- Method: Lecture, discussion, quiz

Presentation Guide

Introduction

Attention. Students of military art and science are required to analyze a complex planning and decision process to produce conclusions about unit effectiveness. (Display VGT No. WA-1-Headliner) As the nature of modern warfare has become more technologically sophisticated, the amount of information which must be processed to plan, organize, direct, and control operations has increased, while the time available to complete this process continues to shrink. Measuring the quality of the unit's command and control (C2) is a primary concern, but the data needed to perform accurate, timely assessments of C2 quality are elusive. It is important to look at the whole process, not just segments, in order to derive an accurate assessment of the unit's C2.

Motivation. The ACCES methodology makes it possible to collect data on C2 systems across settings and over time. The data thus collected are employed to perform credible evaluations of large unit performance. As ACCES data collectors and analysts, you are the instruments of this process.

Development

Let's define some terms so we have a common framework for discussing ACCES. (Display VGT No. WA-2--Terminology)

Analysis: the act of manipulating, comparing, and correlating data to derive conclusions. Those members of the ACCES team who carry out this procedure are the analysts.

Application: the whole procedure by which ACCES data are collected, reduced, and analyzed during and subsequent to a particular exercise.

C2 Evaluation: the judgement, based on measures and data, of C2 process quality. Evaluations can be either qualitative or quantitative.

C2 Performance: the overall C2 effectiveness of a headquarters. The evaluation of performance is the ultimate task of ACCES analysts.

C2 Document: a written or computer-based product of a C2 event, e.g., a STIREP, INTSUM, or FRAGO.

Coding: the transformation of raw data onto data sheets.

Computation: assignment of numbers to objects or events according to a set of rules (or manipulation of numerical data) by the analysts in order to convert reduced data into measures.

Data: discrete elements extracted from document(s) or observed event(s) that are used to describe performance.

Data are considered "raw" if they have not been reviewed, edited for inadvertent errors, and reduced onto data sheets. Once these steps have been taken, the data is said to have been "reduced" or "refined".

(Display VGT No. WA-3--Terminology Continued)

Data Collection: the act of recognizing the important data elements of the event or document, and recording those data elements by time and location. Also referred to as "observation". Data collectors (or "observers") are responsible for carrying out this activity.

Data Reduction: the act of transforming data from raw notes or a coded form into refined data usable in computation. Data reduction includes coordination among data collectors to combine observations and insights on events not observable by a single data collector.

DTG: The Date-Time Group. The DTG employed with ACCES is a six digit identifier of day (first two digits) and military time (last four digits). Exercise time is always used for all data, with any anomalies being carefully noted for resolution by analysts.

Effectiveness: the ability of the unit to achieve the desired effect of an activity.

Environment: the physical and conceptual battlefield surroundings in which a CP operates. The environment includes METT-T; adjacent, subordinate, and superior HQs; the scenario; the unit SOP.

Event: an observable occurrence which is discrete in terms of time and place. Some events may not be observable by a single data collector due to the length of time or the breadth of area over which they take place.

Observation: see "data collection".

Plan: the means by which a headquarters structures its attempts to change or influence the battlefield environment. Plans are the central focus of ACCES evaluations.

Reliability: the consistency of the data collection process.

Quantitative: summary of performance by the assignment of numerical values.

Qualitative: summary of performance by the assignment of characteristics or attributes.

ACCES is a process-measurement tool employed to assess the overall performance of Army headquarters (principally divisions, but also brigades and corps) at various stages of the C2 cycle. [This POI focuses on division-level applications.] ACCES is composed of various data collection and analysis procedures which are implemented by a team of analysts and data collectors. ACCES is based on three underlying assumptions:

1. Division headquarters operate as adaptive control systems that collect information from the environment, process the information, produce and disseminate plans to adapt to the perceived environment and shape it favorably, and monitor the implementation of these plans so as to facilitate and control change of and in the environment.

2. The C2 operating system is made up of interdependent processes that are derived from Army doctrine and articulated through unit SOPs and orders. A model of the system is illustrated here. (Display VGT No. WA-4--ACCES C2 Model)

3. The activity associated with each process can be observed. The activities are composed of events of a predictable type that define the type of data that you will be able to collect. Remember, the gist of the job is to capture the dynamics and information flow going on all around you -- particularly during situation assessment and decision making. At each location you must try to observe and record:

- what people did,
- why they did it,
- what they knew,
- how they knew it, and
- when each event occurred.

ACCES provides meaningful conclusions and insights about C2 performance through collection, reduction, and analysis of observations. Consolidation of data across settings over time will produce reliable information about unit C2 performance.

The goal of ACCES in division-level exercises is to obtain direct measurements of headquarters C2 performance. (Display VGT No. WA-5--Goals) The application of ACCES requires previous knowledge of C2 functions, adherence to unbiased data collection technique, and objective analysis of this data. When properly implemented, ACCES will provide qualitative and quantitative evaluation of unit performance. The ACCES framework leads to a natural structuring of the analysis which can provide insights into critical problems and lead to examinations of possible causes.

The successful application has three phases: preparation, collection & reduction, and analysis.

Preparation Phase

This phase of the application begins as soon as possible after the exercise is scheduled. Five tasks are carried out during this phase: (Display VGT No. WA-6—Preparation)

- Review Exercise Objectives. This includes identification of the training goals, scenario, and the exercise schedule. A successful ACCES application requires that certain sections within the headquarters be observed in accordance with data collection procedures and be assessed using analytic rules and procedures. In addition, prior knowledge of the scenario and of the master events sequence list (MESL) prepares the observer for crucial C2 events. Being in position to record the needed data at the correct time, without being intrusive or compromising the scenario, is essential.
- Compile Data Collection Plan. Included in these early stages of the plan is the selection of the ACCES measures to be employed, and hence the data to be collected for this particular application, while keeping within the bounds of the exercise environment and available data collection resources.
- Select Data Collectors. A team of well-trained collectors is required to record the pertinent events as they occur and to reduce the data into a format suitable for analysis. Identification of observers begins as soon as exercise dates are known, so that schedules can be coordinated for travel and training.
- Brief Staffs. All staff elements participating in the exercise are briefed regarding the application process and the need for their support. Also, the process of determining observer placements is begun at this point.
- Publish Data Collection Plan. This plan is an evolutionary document, written as a guide to achieving the ACCES application objectives, providing observer instructions, and establishing a common framework for the application.

Collection & Reduction Phase

This phase begins immediately preceding the actual exercise and consists of the following four tasks: (Display VGT No. WA-7—Collection & Reduction)

- Train Collectors. Formal classroom training of the collectors in ACCES data recognition and collection techniques is conducted.
- Data Collection. Collection of exercise data requires concentration and trained judgment. A full understanding of the data required to compute the measures is essential for effective data collection.
- Review and Consolidate Data. Frequent review of data and collection methods by roving supervisors helps to prevent loss of essential information. Daily exchanges of observations between collectors are useful, but may not be practical. Some data are coded during the exercise, either by collecting directly onto data sheets or by collectors coding during "quiet time".

- Reduce Data. Data collected during the exercise are coded onto ACCES data reduction sheets. Coded data are checked for clarity and consistency. Collectors confer with one another in order to exchange data on events crossing shifts or occurring in different CPs.

Analysis Phase

This phase is the culmination of all prior efforts and consists of three basic tasks: (Display VGT No. WA-8-

Analysis)

- Compute Scores. ACCES scores are calculated from the reduced data.
- Develop Insights and Conclusions. Scores are analyzed in the context of the exercise objectives. Evaluations of performance are made. Insights as to the strengths and weaknesses of staff performance are derived from both the scores and observers' notes. Also, command and control trends are analyzed, based upon the current and past applications.
- Prepare Results. Scores, insights, and trends are reported in a briefing format and/or in a written document.

These phases and activities are summarized in this graphic representation of the flow of data. (Display VGT No. WA-9-ACCES Data Flow) It demonstrates the sources, techniques, and processes by which data are captured and transformed into measurements and thence to reports, in order to fulfill the goals of performance measurement and systemic feedback and to aid in the identification of causal relationships in C2.

The last step in explaining ACCES is to introduce you to the data collection forms. (Display VGT Nos. WA-10, 11, 12, 13, 14, 15 in succession.) As you see, all these forms share a header; this requests information that is invaluable to those undertaking the analysis of data. Data collectors must always indicate on each data sheet their name and location, and the DTG of the event that they are coding. The other information required by each separate form will be covered in the following lessons.

WA Quiz

The instructor now hands out the ACCES Methodology Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary*(Display VGT No. WA-16—Summary)*

This, then, is the ACCES methodology, a process-measurement tool that can be applied to report on C2 performance at division-level headquarters. It must be emphasized that ACCES is not a mechanistic process, but one which must look at the whole of C2 in order to derive a credible and accurate assessment.

Remotivation

Understanding the role of ACCES and the important contributions you make to understanding C2 performance are part of a vast undertaking. The success of the ACCES team will be reflected in the quality of feedback about C2 process performance to the training unit.

Closure

Now you have the framework - the what and why needed to learn the specific techniques and skills used by Data Collectors.

QUIZ
for
"What is ACCES?"

True-False

- ___ 1. The data collection plan is constructed by the data collectors and reflects the way in which they collected the data.
- ___ 2. All staff elements participating in an exercise where an ACCES team conducts an application should be briefed beforehand.
- ___ 3. Analysts reduce the raw data produced by the data collectors into a form they can use for computing measures.
- ___ 4. ACCES is intended to produce qualitative as well as quantitative evaluations of performance.
- ___ 5. ACCES only obtains indirect measurements of C2 effectiveness.

Matching

(Select the letter from the list a through g corresponding to the correct answer.)

- | | |
|---|--------------------|
| ___ 6. The transferring of raw data onto data sheets, either during the exercise, or during data reduction. | a. analysis |
| ___ 7. The battlefield surroundings of a CP. | b. coding |
| ___ 8. An observable occurrence discrete in terms of time and space. | c. computation |
| ___ 9. Using data to derive conclusions. | d. data collection |
| ___ 10. The assignment of numbers to objects or events, transforming data into measures. | e. data reduction |
| ___ 11. Recognizing and recording the important data element(s) of an event or document. | f. environment |
| ___ 12. The assignment of characteristics or attributes to summarize performance. | g. event |
| | h. quantitative |
| | i. qualitative |

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

13. In the header section of each data sheet, you **must** fill in:
- a. the DTG only; other items are optional
 - b. the DTG and your location; other items are optional
 - c. the DTG, location, and name
 - d. your name and the DTG
 - e. your name and location; the DTG is sometimes impossible to get
14. Data concerning an event that occurs across shifts or CPs:
- a. cannot be coded
 - b. can only be coded by observers coordinating during the exercise
 - c. can only be coded by analysts during analysis
 - d. can be coded in data reduction by coordinating among observers at different shifts & CPs
 - e. this circumstance will not arise
15. If an event takes place at 7.05 p.m. on the 3rd of May 1992 (game time), what DTG should be recorded on an ACCES form ?
- a. 03May921905
 - b. 0305920705
 - c. 031905
 - d. 030705Z
 - e. none of the above

ANSWER SHEET
for
Quiz: What is ACCES ?

1. F
2. T
3. F
4. T
5. F

6. b
7. f
8. g
9. a
10. c
11. d
12. i

13. c
14. d
15. c

each answer is worth 7 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Preparation of Directives

Lesson Plan: PD

General

The purpose of this instruction is to enhance the collection skills of ACCES observers who are familiar with command post operations and understand the ACCES methodology. At the conclusion of the instruction, ACCES observers will understand the concept of preparation of directives and will have practiced the skills needed to collect performance data that describe the unit's ability to prepare and disseminate directives. Directives translate the commander's guidance into executable tasks and resources needed to accomplish assigned missions.

This lesson will require 60 minutes to complete.

Learning Objectives

- Task: Recognize performance associated with the preparation of directives.
- Condition: Given examples of types of directives and the elements of a directive in class.
- Standard: Observers will recognize and discriminate among directives a high percentage of the time and will know the elements of a directive.
- Task: Record accurately the data about directives on the Preparation of Directives (PD) form.
- Condition: Given examples and practice in class.
- Standard: Observers will complete PD forms accurately.
- Method: Discussion, examples, examination of common mistakes in data collection, and demonstrations using data collection forms.

Presentation Guide

Introduction

(Display VGT No. PD-1-Header)

Attention. During the next 60 minutes, we will examine the components of the Preparation of Directive measurement. (Display VGT No. PD-2-Purpose and Methods) The focus of data collection is recording the ability of the staff to prepare orders and directives which provide subordinates sufficient time and resources to execute. Preparation of Directives requires a decision, staff coordination, and the ability to translate commander's guidance and intent into a directive. A directive may be spoken or written. It may be issued as a Warning Order, a FRAGO, an OPORD, an OPLAN, or a contingency to a plan or order. Once completed and approved, the directive is transmitted to the implementing headquarters for action. A Warning Order is often used to provide the implementing headquarters ample time to make its preparations. At the completion of the instruction, ACCES observers will have a framework for collecting the data needed to answer key questions concerning directive preparations and will be familiar with the Preparation of Directives (PD) data collection form.

Motivation. A command post environment is active and often chaotic. (*Display VGT No. PD-3--Focus*) It is important that the ACCES observer know what data to capture for specific measures and how to transfer that data onto the appropriate data collection form. We will discuss examples and review the key questions related to the Preparation of Directives.

Development

Definition of Preparation of Directives. On the ACCES Model note the development of plans and orders. (*Display VGT No. PD-4--ACCES C2 Model*) This leads to production of the final form and its dissemination.

Preparation of Directives pertains to the unit's ability to translate Commander's decisions into directives that communicate his intent and guidance. (*Display VGT No. PD-5--Directives*) We record any action to prepare and communicate directives to subordinate headquarters. The required data include an understanding of the decision and the timeline needed to prepare, coordinate, and execute the directive. A directive may be spoken or written. Directives may include branches, sequels, or contingencies which will influence how subordinate commanders operate. A directive consists of four elements. It may change a previous plan in any one or more of these elements, or establish an entirely new and different plan. The elements of a plan are:

- mission(s)
- task organization (assets)
- schedule(s)
- boundaries

A directive will affect functions within the division. These functions include:

- personnel
- intelligence
- operations
- logistics

We want to know who participated in the preparation process, both quantitatively and by section. It is important to know how long it took to prepare the directive, when the directive was issued, and when it was received. The means by which the directive was transmitted should be identified. If the directive required clarification before it could be implemented, this should be recorded, as well as the nature of the request for clarification, its origin, and any response observed.

The elements of a directive also help define the intended life span of the plan (how far into the future that the plan is intended to be useful). This is also important information, whether it is driven by time (e.g. "from 120200 to 131200") or by events (e.g. "from the time we cross the river until we reach the mountain.")

Another important aspect of plans are contingencies. Many directives will have these built-in options. They provide the unit with alternate means of achieving its goals, by allowing alterations to the plan without the unit having to entirely rewrite it. Thus, a decision may be made to implement a previous contingency; this decision will still require a directive to implement, but only a fraction of the work to produce.

The PD Form. This slide is the “exploded” version of the PD form. (*Display VGT No. PD-6—Expanded PD Form*) It shows the exact information that should be entered for each datum space on the form. Exploded versions of each of the forms have been prepared, but let’s examine some of the details of the exploded PD form now.

As with several forms, there is a section to be filled out by the analyst. Leave this alone unless you are sure you have the information to fill it out, and that the information is correct and free from distortion; having the wrong information here is liable to be very dangerous. But be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase.

Directive preparation is a lengthy process; thus some of the most important information on the form concerns times. Remember the subtle discriminations that ACCES makes: preparation “begins” when the staff is told to begin, not when they start working; a directive is “issued” not when the G3 gives it a number and a DTG, but when it actually gets transmitted or handed off. A PD form fully complete will give a substantial portion of the life-cycle of a plan, including the length of time that the preparers intended it to “run”.

Another important consideration is the identity of the preparers. Be sure to get a solid count of the staff members who participate and the sections from which they come. Only count those who actively contribute to the proceedings. An officer standing in the corner and watching the preparation doesn’t count as participating, even if he’s the CG; he is giving nothing to the process.

This form will almost certainly require coordination between observers, probably in the data reduction step. While two or three observers may have contributions to make about the preparation of a directive, only one PD form per directive should survive the reduction process.

An important adjunct to the PD form (and later to other forms) is the list of operations; let’s look at them, so as to be sure they are familiar and cause no confusion. (*Display VGT No. PD-7—Operations*)

[Note: The instructor must be familiar with the expanded form, and should discuss all the elements, giving special emphasis to those mentioned above. He should also make sure that the students can discriminate one type of operation from another.]

Example of a PD Form. Now let us look at events that would require a PD form. (*Display VGT No. PD-8—Timeline*) This timeline describes part of a hypothetical scenario involving US forces defending the Central European country of Carinthia from attack by its neighbor Borduria. In this scenario, a US mechanized division (the 21st Mech.) is engaged in defending a line of forested hills against a Bordurian armored division. The 21st

has defeated a series of Bordurian attacks; the Bordurian forces facing it are exhausted and ripe for a counterattack. After examining several options presented to him by the staff, at 110350 the CG orders the counterattack to begin at 120530, with the expectation that the enemy forces will be destroyed within 24 hours. He describes the counterattack in detail to the staff and directs them (at 110420) to prepare a new OPORD (OPORD Redbone) to implement it. The counterattack will not change the division's organization, but it sets phase lines and a timetable for the recapture of lost Carinthian territory.

The staff quickly embarks on writing up the order and getting the necessary information from various sections and subordinate units to complete the details. Three members of the Plans staff write the document, and consult G3, G2, G4, the division's three maneuver brigades, the DIVARTY Rep. at DMAIN (artillery coordination is an important part of the plan), and the ALO to get additional input. They finish at 110545, get the G3's approval, and the directive is uploaded on MCS at 110610. MCS works perfectly, and all commands receive the directive at 110615. At 110712 the DIVARTY commander calls in to point out that support fire priorities are confused (whoever typed the document got the times mixed up); the Plans staff clears this up, and the division begins preparing for the counterattack.

[Note: the instructor should, in conjunction with the class, fill out a PD form (VGT No. 9—Blank PD Form) from the events described above; a correct solution is included.]

Common Problems in PD Data Collection. This slide shows common problem areas in the collection of this data. (Display VGT No. PD-10—Common Mistakes) Data collectors often rely on the ACCES observers at the SimCenter to secure all "hard copy" (complete copies of written orders, reports, and so forth). This can lull collectors into a false sense of security; verbal directives may never be transcribed, or if transcribed, may never pass through the SimCenter in a form that will be passed on to the ACCES team. Any verbal directives that data collectors encounter should be captured immediately in as much detail as possible. Likewise, written directives collected at the end of the exercise can sometimes prove difficult to match to the observers' notes, if the latter are not specific enough. For example, divisions and corps will both issue directives during an exercise; "FRAGO #5" is insufficient identification, should both a Corps FRAGO #5 and a Division FRAGO #5 exist. Even within units, the numbering of directives may become confused during the stress of simulated combat; always include enough descriptive information to identify a particular directive independent of its designation. Lastly, it is as important to capture the participation of staff in the process of directive preparation as it is to capture participation in COA analysis. Each member and each section has a different (and potentially valuable) perspective; a directive missing input from the concerned parties may develop fatal flaws.

PD Quiz

The instructor now hands out the PD Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary

Preparation of Directives forms provide important indicators of Command and Control effectiveness. (*Display VGT No. PD-11--Summary*) Accurate data about the completeness and timeliness of directives reveal to the ACCES analysts the ability of the staff to communicate commander's intent and guidance to subordinate headquarters. Forms must contain the critical data about the nature of the commander's decision, what plan elements were affected, who participated in preparing the directive, when the directive was prepared and disseminated, what follow-up actions took place, and how long the directive was **expected** to require for completion.

Remotivation

ACCES observers are able to observe firsthand the directive preparation process. Your insights and observations are essential for ensuring the unit has an accurate perception of the quality, timeliness, and completeness of its directive preparation process.

Closure

The key elements of directive preparation (who, what, when) are easy to identify and record. Accurate collection of these data leads to effective analysis, which in turn contributes to the unit's understanding of its C2 performance.

QUIZ
for
"Preparation of Directives"

True-False

- ___ 1. All directives will be either verbal or written.
- ___ 2. All staff elements contribute to a directive before it is issued.
- ___ 3. All directives will deal with a change to the unit's mission.
- ___ 4. A directive will never be transmitted by more than one means .

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

5. Directive preparation is started when:
- a. the staff starts typing the directive
 - b. the CG tells the staff to prepare the directive
 - c. the warning order for the directive is sent out
 - d. the entire Plans staff is assembled
 - e. [none of the above]
6. An event-driven directive is one that:
- a. is to be initiated and/or completed at specific times
 - b. is to be initiated and/or completed by specific actions or occurrences
 - c. deals only with events, not unit activity
 - d. leaves the initiative to the enemy
 - e. [none of the above]
7. Staff are counted as participating in directive preparation only if:
- a. they are physically present
 - b. they contribute a very good idea
 - c. they contribute to the discussion or work in some way
 - d. they are warrant officers or commissioned officers
 - e. [none of the above]

ANSWER SHEET
for
Quiz: Preparation of Directives

1. T
2. F
3. F
4. F

5. b
6. b
7. c

each answer is worth 14 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Decisions

Lesson Plan: DC

General

The purpose of this instruction is to enhance the collection skills of ACCES observers who are familiar with command post operations and understand the ACCES methodology. At the conclusion of the instruction, ACCES observers will understand the concept and elements of a decision and will have practiced the skills needed to collect performance data that describe the decision making activities within the unit.

This lesson will require 45 minutes to complete.

Learning objectives

- Task: Recognize decisions in the exercise context.
- Condition: Given examples in class.
- Standard: Observers should be able to discriminate decisions from other performance or from descriptions of activities.
-
- Task: Record information about decisions accurately on the Decision (DC) data collection form.
- Condition: Given examples, discussion, and practice in class.
- Standard: Observers should complete Decision forms accurately.
-
- Method: Discussion, examination of common collection problems, examples, and practice using the data collection form.

Presentation Guide

Introduction(Display VGT No. DC-1--Header)

Attention. During the next 45 minutes, we will examine the components of the Decision measures. (Display VGT No. DC-2--Purpose) Military decision making occurs under conditions of risk and uncertainty. Uncertainty arises both from the limited information available and from the fact that there is no guarantee that information is correct or fully understood. Risk arises because commanders seldom have adequate resources to deal simultaneously with all possible threats and must decide which threats and opportunities are crucial and which can be treated more lightly. Decisions are stimulated by situation assessments, a need to select a new COA, or directives from higher headquarters. Decisions may result either in new plans or in orders activating a contingency within an old plan. Decisions are made by the Commander, a subordinate in the name of the Commander, an Assistant Division Commander (ADC), Chief of Staff/Executive Officer, and others.

Motivation. Decisions provide benchmarks that are used by ACCES analysts to chart the unit's command and control process. (*Display VGT No. DC-3--Focus*) Decisions are unique and distinguish individual decision cycles that can be used to describe a unit's performance. Decisions stimulate staff actions to direct and synchronize battlefield actions. ACCES observers know what data to capture concerning decisions and how to transfer those data onto the appropriate form(s). We will discuss examples and review the key questions related to Decisions.

Development

Definition of Decision Measures (DC). The ACCES Model of the C2 process shows that command decisions can be made at various times throughout the process. (*Display VGT No. DC-4--ACCES C2 Model*) Decision measures describe when the decisions were made, by whom, and which elements of the plan the decision affects. (*Display VGT No. DC-5--Decision Elements*) You have witnessed a decision if it affects:

- mission(s)
- task organization
- schedule(s)
- boundaries

This category of measurement concerns the decision maker's communication of his intent and guidance to subordinates who will translate the decision into directives. Evidence of decision making can be observed in formal and informal settings. Formal situation assessments and decision briefings often result in decisions; battlefield situations presented in informal assessments may also produce decisions. Both types of decision settings produce a cycle which can be traced through the ACCES data forms. In both cases it is important to recognize the stimulus, and the time that the stimulus is "perceived" (recognized and understood) by those in the command center.

The DC Form. (*Display VGT No. DC-6--Expanded DC Form*) The instructor must be familiar with the expanded form, and should discuss all the elements, giving special emphasis to:

- * stimulus
- * perception of the stimulus
- * what was the decision
- * directive identification
- * type of operation
- * contingency activation
- * other related data sheets (directive, COA analysis, etc.)

Example of a DC Form. Let's look at the coding of a decision event. (Display VGT No. DC-7--Decision Timeline) Going back to our previous scenario, the decision to cease defending and counterattack was taken by the CG in the Ops area of the MAIN at 110350. This decision was based on an assessment of the enemy strength and dispositions contained in a briefing that the Assistant G-3 had given to the CG at 110230. The assessment was itself a result of a conversation at 110140 (including an assessment of enemy vulnerability) between the Assistant G-3 and the Assistant G-2 and the G-2 Battle Captain. This is a case where the stimulus for a decision is obvious, but tracking down its origin is more difficult. The stimulus is clearly the assessment of the enemy's weakness; but the assessment first surfaced (was "perceived") at 110140.

The CG directed that COAs be prepared to exploit the enemy's weakness. After the analysis of the COAs was presented, he made the decision to counterattack.

As we know, the decision specifically affected the division's maneuver brigades and the DIVARTY, and changed the unit's goals at the same time it created new phase lines and an attendant schedule for achieving them. The directive (called OPORD Redbone) was not a contingency, but a whole new operation. Often a decision of this type would be embodied in a FRAGO, rather than an OPORD, but the division had not planned to take the offensive, and the CG decided the staff needed the experience of producing a new OPORD under the stress of (simulated) combat.

[*Note: the instructor should, in conjunction with the class, fill out a DC form (VGT No. DC-8--Blank DC Form) from the events described above; a correct solution is included.*]

Common Mistakes in Decision Data Collection. Here are a few common errors that can be made in collecting data about decisions. (Display VGT No. DC-9--Common Mistakes) It is important to identify the activation of a contingency vice the creation of an entirely new plan. Those CPs that have contingencies prepared to deal with changes in the battlefield are operating in a much less reactive manner than those that have to wholly revise their plan with each unexpected change in events. Most commonly, the activation of a contingency will be explicit in the context of decision making; but data collectors must be alert for those situations where the contingency-nature of a decision is implicit. Another common pitfall for observers is to observe the reporting of a decisive event (such as the capture of an enemy headquarters, the crossing of a crucial boundary) and take it for a decision; decisions reflect the **intent** to change some feature of the battlefield, not the **event** of a change. Sending the 3rd Brigade to Tel-el-Kebir instead of Omdurman is a decision; the 3rd Brigade arriving at Tel-el-Kebir is only an event. It may be an important event, and other things may flow from it (reports, new assessments, etc.) but it is not a **decision**. Lastly, it is important to remember that decisions never occur in isolation; they have stimuli (reports, assessments, COA analyses), and they themselves cause other things to happen (directives and the reporting of their implementation). All of these are opportunities for more data sheets to be coded; be sure to identify these during directive preparation.

DC Quiz

The instructor now hands out the DC Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary

Observing decisions is the primary means of developing an accurate timeline for the application of the methodology. (*Display VGT No. DC-10-Summary*) Decision cycles can be used to relate reports and form a coherent picture of a the unit's command and control process. Accurate data about the unit's decisions provide insights about the key events which stimulated command and control. Decisions can be identified and reported from any node, not just DMAIN or DTAC. Observers must recognize when decisions occur and collect data that describe them for the analysts.

Remotivation

ACCES observers are able to observe firsthand the decision making process and should be able to link decisions to specific events or assessments. Your insights and observations are essential for ensuring the unit has an accurate perception of how its decisions are communicated and coordinated.

Closure

The key elements of decisions (who, what, when) are recognizable and recordable. These findings contribute to the unit's understanding of its Command and Control performance through ACCES reports.

QUIZ
for
"Decisions"

True-False

- ___ 1. All decisions will have a stimulus.
- ___ 2. Only the Commander can make a decision.
- ___ 3. All decisions will deal with at least one of: mission, task organization, schedule, boundaries.
- ___ 4. All decisions will have contingencies.

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

- 5. MG Gray to his staff: "I want the 3rd Brigade to move northeast instead of due east and seize the railhead." This is:
 - a. a suggestion
 - b. a directive implementing a decision
 - c. an assessment stimulating a decision
 - d. a decision
 - e. [none of the above]
- 6. COL Light (Bde. Commander): "The enemy seem to be falling back; we shall take advantage of their confusion to attack!" This is:
 - a. a report
 - b. a directive implementing a decision
 - c. an assessment stimulating a decision
 - d. a decision
 - e. [none of the above]
- 7. BG Fox: "Give priority for all artillery and air support to the 1st Brigade, and move their LD time up to 0100." This is a decision altering:
 - a. task organization, boundaries
 - b. mission, task organization
 - c. boundaries, schedule
 - d. schedule
 - e. [none of the above]

ANSWER SHEET

for

Quiz: Decisions

1. T
2. F
3. T
4. F

5. d
6. c
7. d

each answer is worth 14 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Course of Action Analysis
Lesson Plan: CA

General

The purpose of this instruction is to enhance the collection skills of ACCES observers who are familiar with command post operations and understand the ACCES methodology. At the conclusion of the instruction, ACCES observers will have knowledge of the concept of Course of Action (COA) Analysis needed to collect performance data that describe the unit's ability to select, evaluate, and accurately predict the consequences of COAs.

This lesson will require 45 minutes to complete.

Learning Objectives

Task: Recognize course of action analysis.

Condition: Given examples of COA Analysis in class.

Standard: Know COA Analysis elements.

Task: Record COA analysis including COA elements considered during evaluation accurately using the Course of Action Analysis (COA) form.

Condition: Given examples of COA Analysis and practice in class.

Standard: Observers will fill out COA forms accurately.

Method: Discussion, examination of common data collection errors, examples of COA analysis and practice using data collection forms.

Presentation Guide

Introduction(Display VGT No. CA-1--Header)

Attention. During the next 45 minutes, we will examine the components of the Courses of Action analysis. (Display VGT No. CA-2--Purpose) This includes those measures which describe the analysis, wargaming, and selection of COAs by the unit. This activity will occur primarily in planning sections, or during planning briefings. Another facet of this measure is the ability of the unit to predict the consequences of alternative COAs. At the completion of the instruction, ACCES observers will have a framework for collecting the data needed to answer key questions concerning course of action analysis and selection, and will be familiar with the Course of Action Analysis form.

Motivation. Each command post environment has unique characteristics which allow it to function to accomplish assigned missions. (Display VGT No. CA-3--Focus) The level of activity which can be observed will vary depending on the unit SOP and the personalities of the Commander and staff. As a result, no two CPs are

alike. Course of action analysis and selection are processes that may involve many staff elements and directly support decision making. It is important that the ACCES observer know what data to capture and how to transfer those data onto the appropriate form. We will discuss examples and review the key questions related to course of action analysis and selection.

Development

Definition of Course of Action Analysis (COA). Course of Action Analysis is shown on the ACCES Model in terms of forecasting possible futures and wargaming options. (*Display VGT No. CA-4-ACCES C2 Model*) Note that this follows assessment of the situation.

This category of measurement concerns the unit's ability to generate courses of action and to analyze the consequences of each COA projected into the future against assessed enemy intentions and capabilities. (*Display VGT No. CA-5-COA Evaluation Areas*) Based on the analysis, one COA is chosen. COA analysis should consider the possibility and number of anticipated enemy reactions, the discussion of mission accomplishment, and residual friendly and enemy capacity if the COA is implemented. Evidence of these considerations can be obtained by monitoring COA development and discussions, or by observing decision briefings where a specific COA is selected. It is also important to observe whether in COA discussions the unit considers the possible duration of a suggested COA. Observers should note the level of staff participation in COA analysis (both in number of staff members and numbers of sections represented) and the time that analysis of COAs is completed.

The CA Form. This slide is the "exploded" version of the CA form. (*Display VGT No. CA-6-Expanded CA Form*) It shows the exact information that should be entered for each datum space on the form.

Most important, be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase. Also, be sure to make a note of all related forms. The interrelationship between events is crucial to the analytical process, and the data collector is best able to comprehend it, since he sees it firsthand.

Each Observer should be alert to the requirement to capture data that describe how the unit generates, analyzes, and selects courses of action to accommodate change in the situation or operations. As with PD, it is important to capture the number and variety of the staff members participating in COA analysis, and **only** those participating. Remember, to count as participating, a staff member must make a contribution to the discussion, not simply observe!

Each COA seriously considered should have a brief description, and should be "graded". It is not always easy to catch references that effectively address the elements of COA consideration, so observers must be alert. Be sure to note COAs that the staff dismissed without in-depth discussion; a staff that thinks of three COAs and seriously discusses one is still ahead of a staff that only comes up with one to begin with. And be sure to mark the COAs recommended and selected; if you don't observe the latter because the brief is held elsewhere, you

should be able to get the information during data reduction from the notes of another data collector who saw the briefing.

It takes a coordinated effort between the Current Operations and Planning section observers to record all of this activity. They must work together to cover as much of the staff estimate process as possible and to ensure they understand what sections are active in the COA development, how many individuals contribute to the generation and analysis of COAs, how many COAs are evaluated, whether the prediction criteria are addressed for each COA, and which COAs are selected from those briefed and recommended. Note that, if the Commander formulates his own alternative(s) in the decision briefing and sends the staff back to reanalyze the COAs in light of his contribution, one COA analysis would have been concluded and an entirely new one begun.

[Note: The instructor must be familiar with the expanded form, and should discuss all the elements, giving special emphasis to:

- * participation*
- * COA recommended*
- * COA selected*
- * time completed*
- * time COA covers*
- * articulated but not considered*
- * related data sheets (DC and SA).]*

Example of a CA Form. Let us return to our scenario. (Display VGT No. CA-7-COA Timeline) The decision coded earlier came at the conclusion of a COA brief. The briefing presented the results of a COA analysis session conducted earlier in the Plans area. In that session, the Plans Group (the G-3 Plans Asst. CofS; two G-3 Plans officers; a G2 Plans WO; the ALO; and representatives from G4, DIVARTY, Division ADA, Engineers, the three maneuver brigades, and the aviation brigade) discussed the CG's guidance for the formulation of COAs, and his intended end-state for a counterattack. The guidance and intent came down to two goals: destroy and/or capture the enemy forces in zone and advance so swiftly that no more enemy troops could enter the area to help defend it. The Group kicked around five possible COAs, then eliminated two and sat down to seriously dissect the other three.

The first and second were much alike. Each involved a diversionary attack and deception operation on one enemy flank (either the left or the right) and later a concerted main attack on the other. In each case, the Plans Group agreed that the enemy would almost certainly move forces to protect the flank initially threatened, thus weakening the other side for the main attack. This would result in a quick breakthrough with few losses, but much of the enemy would get away. With the delay for the deception, these plans would also take a long time, perhaps thirty to thirty-six hours, to execute.

About 110300, the discussion on the first two COAs died down. At this point the third COA was discussed: a pinning attack on the center of the enemy line, followed by enveloping attacks on both enemy flanks. With no deception plan to prepare and execute and minimal delay between the pinning move and the attacks, the engagement would be completed much faster (twelve to twenty-four hours) and the envelopment would catch most of the enemy. It was acknowledged that this plan would be much more costly in the initial stages, but that the final payoff (a swift destruction of the enemy) would be worth it. The staff agreed that the enemy was already in such confusion that a static defense would be the only response they would come up with, making the envelopment even more effective. Taking all things into consideration, the Group recommended this last COA.

The recommendation (given in a brief at 110330) was sufficient for the CG to adopt immediately the third COA (110350) and direct the staff to prepare it for implementation at 120530.

[Note: the instructor should, in conjunction with the class, fill out a CA form (VGT No. CA-8-Blank CA Form) from the events described above; a correct solution is included.]

Common Mistakes Using the COA Form. Here are some problems that observers have had in previous exercises in using the COA form. (Display VGT No. CA-9-Common Mistakes) The COA analysis and the decision brief often do not occur in the same location, so the observer who codes a COA analysis may not have the opportunity to observe and code the selection of a COA. The observer should, however, coordinate with the observer at the location where selection takes place so as to gather this information. Such coordination could take place during the application, but is more likely to take place during data reduction.

The process of COA analysis is usually long, and often takes place "across" other activities in the CP, but the observer must remain alert to the ongoing process, and capture all occasions of input by different staff members and staff sections.

Likewise, the terms ACCES uses to describe COA elements are not taken directly from Army manuals, so the staff producing COAs may not frame their analysis specifically in these words, and will often touch on these elements indirectly. And lastly, it is important to keep an accurate count of the participants in COA analysis, and the sections they represent. Remember that each remote CP consulted counts as at least one extra staff member, as well as one extra section.

COA Quiz

The instructor now hands out the COA Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary

Course of Action generation and analysis are important indicators of Command and Control effectiveness. *(Display VGT No. CA-10--Summary)* Accurate data about prediction accuracy reveal to the ACCES analysts the ability of the staff to assimilate information and present logical recommendations about the future to decision makers. These activities are embedded in the staff estimate process. The predictive quality of COAs contributes to the unit's ability to plan and control operations. ACCES observers must be aware of the sources of data needed to answer questions about COA predictions. In most instances, COA data collection must be coordinated at DMAIN among the ACCES observers and integrated in order to produce a complete record of this activity. Their journals and forms must contain the critical data about the nature of the estimate process: what sections were actively involved, who participated in the generation and development of COAs, what COAs were considered, how thoroughly the staff examined them in light of the COA elements, and when the selection of a COA took place.

Remotivation

ACCES observers are able to observe firsthand the estimate process where COAs are generated. Your insights and observations are essential for ensuring the unit has an accurate perception of how it develops, selects and uses COAs to predict future outcomes.

Closure

The key elements of course of action generation and analysis (enemy reaction, mission accomplishment, friendly capacity, and enemy capacity) are recognizable and recordable. These findings contribute to the unit's understanding of its Command and Control performance through ACCES reports.

QUIZ

for

"Course of Action Analysis"

True-False

- ☐ 1. A remote CP contacted for COA analysis input counts as a section participating.
- ☐ 2. Staff will address all ACCES COA elements in their COA analyses.
- ☐ 3. An observer in one section will probably not be able to observe all of a COA analysis.
- ☐ 4. If, during a COA brief, the commander postulates a new COA for the staff to examine, it should be added to the COA form already completed.

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

- 5. Staff analyzing a COA should address:
 - a. enemy reaction
 - b. mission accomplishment
 - c. residual capacity of friendly and enemy forces
 - d. all of the above
 - e. [none of the above]
- 6. An artillery officer serving in the G3 Plans section suggests an enemy reaction to a COA; he is counted as:
 - a. a G3 Plans staff member
 - b. a DIVARTY officer
 - c. both a DIVARTY officer and a G3 Plans member, since he has two viewpoints
 - d. not contributing, since he is not a General Staff officer
 - e. [none of the above]
- 7. A discussion of three enemy COAs in relation to several friendly courses of action should be coded as:
 - a. prediction of enemy reaction
 - b. prediction of enemy reaction and number of enemy reactions
 - c. a new COA analysis
 - d. residual enemy capacity at completion
 - e. [none of the above]

ANSWER SHEET

for

COA Quiz

1. T
2. F
3. T
4. F
5. d
6. a
7. b

each answer is worth 14 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Situation Assessment

Lesson Plan: SA

General

The purpose of this instruction is to enhance the data collection skills of ACCES observers who are familiar with command post operations and understand the ACCES methodology. At the conclusion of the instruction, ACCES observers will have knowledge of the concept of situation assessment and will have practiced recording situation assessment performance.

This lesson will require 45 minutes to complete.

Learning Objectives

- Task: Recognize the event of situation assessment, both comprehensive and selective.
Condition: Given in-class examples.
Standard: Discriminate between selective and comprehensive assessments. Know all the elements of a friendly and of an enemy situation assessment.
- Task: Record situation assessment behavior accurately on the Situation Assessment (SA) form.
Condition: Given examples of situation assessment in class.
Standard: Observers will be able to fill out SA forms accurately.
- Method: Discussion, examination of lessons learned from previous applications, example of tracking, and demonstrations using data reduction forms.

Presentation Guide

Introduction(Display VGT No. SA-1-Header)

Attention. During the next 45 minutes, we will examine the Situation Assessment measures. (Display VGT No. SA-2-Purpose) The focus of situation assessment is the ability of the staff to formulate selective and comprehensive assessments of the friendly or enemy situations. At the completion of the instruction, ACCES observers will have a framework for collecting the data needed to answer key questions concerning situation assessments and will be familiar with the Situation Assessment data collection form.

Motivation. A command post environment is active and often chaotic. (Display VGT No. SA-3-Focus) It is important that the ACCES observer know what data to capture and how to enter that data onto the appropriate form. We will discuss examples and review the key questions related to situation assessments.

Development

Definition of Situation Assessment. Reports give the facts. Interpretations that integrate or summarize these facts are situation assessments (SAs). Situation assessments demonstrate the unit's ability to understand the friendly and enemy situations from available information. *(Display VGT No. SA-4-ACCES C2 Model)* The ACCES model shows that assessments result from reports. Assessments affect decisions and lead to the development of orders and plans and/or the need to exchange information. Each observer should be alert to the need to capture data that describe how the unit formulates situation assessments. We record any situation assessment, whether it is comprehensive or selective, written or spoken.

SAs are either "comprehensive" or "selective". *(Display VGT No. SA-5-Situation Assessment)* Comprehensive SAs are those that ought to cover all the elements of that type; in other words these are SAs that the audience may reasonably expect to cover "all the bases". Such SAs are generally given in a formal setting, and/or for senior personnel.

Selective SAs are those that are made during the normal flow of events, either because new information arrives, or a staff member sees old information in a new light. They are not expected to be complete. Senior officers may receive these, and it is crucial to recognize the difference between a commander asking for "an update" or "a picture" of the battlefield (a request for a comprehensive SA, however informal the setting), and the same officer asking for detailed information about a specific unit or event (a request for a selective SA, however completely it may cover that unit or event).

SAs are also categorized as "friendly" or "enemy", depending on whose situation they refer to. A friendly situation assessment should consider these factors: *(Display VGT No. SA-6-Friendly SA)*

- mission
- task organization
- disposition (location)
- activity
- status
- support

An enemy situation assessment should consider these factors: *(Display VGT No. SA-7-Enemy SA)*

- composition
- disposition (location)
- combat power
- activity
- capabilities (available courses of action)

The enemy and friendly SA elements differ primarily because considerable detail is available concerning Blue forces (e.g., specific missions and task organization), while knowledge of Red forces is approximate, rather than exact. For example, composition can refer to the mix of forces ("tank and mechanized troops") since it is not always possible for Blue to know specific enemy unit designations or cross-attachments; the task organization of Blue forces should be known exactly ("Task Force Plume is the 1/112th Infantry and the 1/743rd Armor battalions").

We want to know who made the interpretation of the situation, when, and how far into the future the unit believed this interpretation would be valid. We also want to know whether the assessment or subsequent discussion of it included the contemplation of more than one possible "future" or course of events.

Assessments are "caused" by something, whether it is the Commander's desire for a current "read" of the battlefield, or the arrival of new information that shows the situation in a different light. It is important to note these causes, as they may have a bearing on the weight that is attached to the assessment itself. Equally important is the identity of the person(s) making the assessment. A discussion between two map NCOs over their perception of the enemy's disposition (if it goes no further) will have less effect on the actions of the CP than the G3's brief to the Commanding General following a major enemy attack.

The comprehensive situation briefings to the Commander are one of the primary sources of data on situation assessments. In fact, each staff element may offer its assessment in the context of its functional area of responsibility; the ACCES observer should code each of these separately. The Commander must assimilate and integrate these perceptions and ensure that a common, consistent picture of the current situation is used by his commanders and staffs. ACCES Observers note when different understandings exist within a C2 node. Analysts are able to look across nodes to determine whether all nodes have a current and common understanding of friendly and enemy situations.

The SA Form. This slide is the "exploded" version of the SA form. (*Display VGT No. SA-8-Expanded SA Form*) It shows the exact information that should be entered for each datum space on the form.

As with several forms, there is a section to be filled out by the analyst. Leave this alone unless you are sure you have the information to fill it out, and that the information is correct and free from distortion; having the wrong information here is liable to be very dangerous. But be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase. Also, be sure to make a note of all related forms. The interrelationship between events is crucial to the analytical process, and the data collector is best able to appreciate it, since he sees it firsthand.

The crucial elements of the SA form are the type of assessment (comprehensive or selective, as discussed above), the assessment elements addressed (mission, task organization, etc.), the "time span" of the assessment (the time "assessment covered the current and expected situation up to"), and the "other futures considered

possible.” This last element is worthy of particular mention. Each assessment consists of one or more futures, specifically described by the primary assessor(s), or brought up in discussion as part of the assessment process. Therefore, whenever an alternative view of the situation, unit, or event being assessed is brought up by the assessor or by another member of the staff (including the “audience”, i.e., the commander, VIP, or fellow staff member to whom the SA is being made), it is considered not as a separate assessment, but as a “future”, a different perspective on the same subject.

[Note: The instructor must be familiar with the expanded form, and should discuss all the elements, giving special emphasis to those mentioned above.]

Example of an SA Form. Returning again to our scenario, we will examine the situation assessment that sparked the decision to counterattack. (Display VGT No. SA-9—Illustration and Timeline) The division had been fighting a defensive battle for some time against repeated onslaughts by the Bordurian 12th Royal Armored Division. Then at 102353 the forward brigades of the 21st Mech. reported that the Bordurian troops, having taken heavy losses, were moving back from their assault positions. At 110021 a Special Forces recon team confirmed the withdrawal, but revealed that enemy combat troops had become intermingled and confused with their own supply trains, seemingly due to poor road management. At 110048 an aerial reconnaissance overflight revealed that several bottlenecks had developed around passes in the hills to the enemy rear, due to avalanches and heavy storms. Finally, at 110136 an Air Cavalry deep attack unit reported that they had discovered and destroyed the enemy divisional headquarters. At 110140, the Assistant G-2, the G-2 Battle Captain, and the Assistant G-3 huddled at the map to discuss the situation. The Asst. G-2 led the discussion and postulated that the enemy armored division was down to 60% of its original strength, in disarray due to terrain and weather conditions and its own road management problems, in full retreat, and liable to break apart if hit hard and quickly. The Asst. G-3, playing devil’s advocate, suggested that the enemy still had a good portion of their artillery and combat aviation intact, and could conduct a fierce fighting withdrawal. The G-2 Battle Captain pointed out that with no headquarters to coordinate movement, the enemy artillery and aviation was probably as great a danger to their own troops as to the US forces. The Asst. G-3 then agreed to present the SA to the CG, which he did at 110230, with the Asst. G-2 on hand to present details of the enemy’s current locations.

[Note: the instructor should, in conjunction with the class, fill out an SA form (VGT No. SA-10—Blank SA Form) from the events described above; a correct solution is included.]

Common Mistakes Using the Situation Assessment Forms. Previous data have indicated that the single best indicator of good planning is good situation assessments. Therefore, how the unit assesses facts and forms an understanding of the situation is a key focus of the observer. Making these conclusions about performance requires that observers collect good data. Here are some examples of mistakes that can be made in data collection. (Display VGT No. SA-11—Common Mistakes) It is of primary importance that collectors correctly

identify comprehensive and selective assessments. Otherwise, analysts are unable to evaluate correctly the value of the trade-offs involved in the two types. It is also important that collectors properly describe the assessments they code. Simply listing the subjects touched upon, or the persons involved, is wholly inadequate. For the analysts to make the judgements required for their work, the data collectors must capture as detailed a description of the assessments observed as is possible within the constraints of time and recording space. Lastly, it is crucial to note the presence in a discussion of alternative assessments, or "futures". By observing the breadth of the possibilities considered, the analysts can assess the richness of the CP's assessment range.

SA Quiz

The instructor now hands out the SA Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary

Situation Assessments are important indicators of Command and Control effectiveness. (*Display VGT No. SA-12-Summary*) Accurate data about the completeness of enemy and friendly situation assessments reveal to the ACCES analysts the ability of the staff to create and maintain a common perception of the battlefield within and across command posts. ACCES observers must be aware of the elements of a comprehensive situation assessment so they can capture them on forms and in journals, as necessary. Forms must contain the critical data about the nature of and the reason for the assessment, who participated, what elements were discussed, when the assessment was presented, how far it "looked" into the future, and what follow-up actions took place.

Remotivation

ACCES observers are able to observe firsthand the situation assessment process. Your insights and observations are essential for ensuring the unit has an accurate perception of the quality and completeness of the unit's situation tracking and assessment.

Closure

The key elements of enemy and friendly situation assessments are easy to identify and record. Careful data collection leads to effective analysis, which contributes to the unit's understanding of its Command and Control performance.

QUIZ

for

"Situation Assessment"

True-False

- ___ 1. Any situation assessment made to a general officer should be comprehensive.
- ___ 2. If a brief contains only factual information about mission, task organization, disposition, etc. it should not be coded as an SA.
- ___ 3. It is possible for an assessment to "look" no further into the future than the current time.
- ___ 4. If more than one future is discussed in relation to a situation, it should be coded as a separate SA.

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

- 5. A comprehensive situation assessment:
 - a. will address all SA elements
 - b. should address all SA elements
 - c. need not address all SA elements
 - d. will cover only enemy forces
 - e. [none of the above]
- 6. A G-3 officer delivers a brief beginning "Mission and task organization remain unchanged." He goes on to discuss the battle positions that friendly units are moving towards, and the provisions for supply. This SA covers:
 - a. mission, task organization, support
 - b. mission, task organization, status, support
 - c. disposition, activity, support
 - d. mission, task organization, disposition, activity, support
 - e. [none of the above]
- 7. A G4 officer remarks that twelve hours after the division crosses Phase Line Bullock, they will have one day's worth of ammunition left (a specific decision "trigger" in the current operation). The time span of this assessment should be coded as:
 - a. current
 - b. 12 hours
 - c. 36 hours
 - d. the time PL Bullock is crossed + 36 hours
 - e. [none of the above]

ANSWER SHEET

for

SA Quiz

1. F
2. T
3. T
4. F

5. b
6. d
7. d

each answer is worth 14 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Information Exchange

Lesson Plan: IE

General

The purpose of this instruction is to enhance the data collection skills of ACCES observers who are familiar with command post operations and understand the ACCES methodology. At the conclusion of the instruction, ACCES observers will understand the concept of information exchange and will have practiced the skills needed to collect performance data that describe the unit's ability to coordinate battlefield actions and seek information.

This lesson will require 45 minutes to complete.

Learning Objectives

- Task: Recognize information exchange events.
- Conditions: Given example and explanation.
- Standard: The observer will be able to recognize examples of information exchange, and discriminate between battlefield action coordination and information seeking.
-
- Task: Record exchange data accurately on the Information Exchange (IE) data form.
- Conditions: Given examples and group discussion.
- Standard: Observers will accurately complete IE forms.
-
- Method: Discussion, examination of common mistakes seen in previous applications, examples and demonstrations using data reduction forms.

Presentation Guide

Introduction(Display VGT No. IE-1-Header)

Attention. During the next 45 minutes, we will examine the components of the information exchange measures. (Display VGT No. IE-2-Purpose & Methods) Information exchange includes those measures that describe how staffs coordinate battlefield actions within a command post and among command posts, and how staffs seek out information in an effort to build or validate a picture of the battlefield. At the completion of the instruction, ACCES observers will have a framework for collecting the data needed to answer key questions concerning information exchange and will be familiar with the Information Exchange (IE) Form.

Motivation. A command post environment is active and often chaotic. (Display VGT No. IE-3-Observer Focus) It is important that the ACCES Observer know what data to attend to and how to record that data onto the appropriate form. We will discuss examples and review the key questions related to information exchange.

Development

Definition of Information Exchange. Information exchange consists of two types of activity: battlefield action coordination (often simply referred to as coordination) and information seeking. (*Display VGT No. IE-4—Information Exchange Activities*) Coordination focuses on synchronizing actions on the battlefield as plans are being carried out. Information seeking deals with the “pulling” of information from one or more sources, as opposed to the more common “pushing” of information in the form of reports or queries to clarify reports. It is the active solicitation of information in order to update the CP’s battlefield picture or to otherwise inform decision makers in circumstances that do not lead to changes in battlefield activity.

Both forms of information exchange share certain characteristics. They are both active endeavors, and so must be initiated by someone. But often the need for information exchange is perceived by one person but executed by another. Thus, observers must record both who requested the exchange and who initiated it. As you will see, such exchanges may be long and complex, involving several sections or CPs. Data collectors must be careful to get all the connections, and record all the various times involved.

The nature of the exchange itself is important: what issues are involved? How do they relate to one another? Exchanges deal with one or more functions within the division that should be captured. These are:

- personnel
- operations
- intelligence
- logistics.

The ACCES model shows information exchange in the Planning and Coordination block. (*Display VGT No. IE-5—ACCES Model of C2 Process*) Information exchange can take place within a CP or between CPs. You are seeing information exchange behavior if someone is asking questions, checking to see if alternate actions must be taken to ensure success, or arranging such actions. The need for information exchange can be stimulated while planning, making decisions, or by situation assessments which bring to light a need to coordinate.

It is important to highlight the difference between information exchange, on the one hand, and the simple querying for clarification or requests for retransmission (RFR), on the other. It is important because these activities can often bear a considerable resemblance to each other. If a unit asks for clarification of a directive or queries a report, they are simply attempting to confirm or clarify information **already passed** to them by the CP or section they are questioning. This differs from information seeking, in which the questioning party **initiates** the dialogue by “reaching” for information.

The IE Form. This slide is the “exploded” version of the IE form. (*Display VGT No. IE-6—Expanded IE Form*) It shows the exact information that should be entered for each space on the form. As with several forms, there is a section to be filled out by the analyst. Leave this alone unless you are sure you have the information

to fill it out, and that the information is correct and free from distortion. Having the wrong information here is liable to be very dangerous. But be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase.

Each Observer should be alert to the need to capture data that describe how the unit seeks information and coordinates actions as an operation unfolds. Observers should be careful to discriminate between those information exchange events that represent coordination and those that represent information seeking. The litmus test for coordination is whether the exchange alters or is intended to alter battlefield conditions. Exchanges that do not are examples of information seeking. At times this distinction will not immediately be clear, and must be captured in data reduction.

The most important elements of the IE form are the persons and times involved, and the description of the action. The analysts must know who was involved and when they spoke if the exchange is going to be pieced into the puzzle of the exercise timeline. But they must also understand what the exchange concerned, or knowing who was talking when will be of no value.

[Note: The instructor must be familiar with the expanded form, and should discuss all the elements, giving special emphasis to those mentioned above.]

Example of an IE Form. Let's look at an IE example and complete an IE form. (*Includes VGT No. IE-7-Illustration and Timeline*) In the Carinthian example, the commander of one of the division's forward support battalions (FSBs) discovers that the road priorities for OPORD Redbone don't take account of a planned shift of the allied-US divisional boundary. He discovers this at 120742 when his supply group comes to a turning onto the main highway, only to find a column of allied troops (a Carinthian column) moving down the main highway and blocking his route! At 120745 he calls the DMAIN G4 (the location of our observer); the G4 promises (at 120749) to get back to him. The G4 talks to the G-3, the G5, and the LNO for the allied division (120750-120806). The LNO calls back (from 120807 to 120835) to the Carinthian divisional headquarters, and engineers a compromise with the Carinthian division commander. The FSB will be given the road for four hours, then it will revert to the Carinthians. He passes this compromise to the U.S. DMAIN staff, who discuss it from 120836 to 120840. It is then transmitted back to the FSB and the Carinthian column from 120853 to 120856. Finally the FSB gets onto the main road, and drives off to find its brigade. The coordination between the FSB and the DMAIN takes place over FM, while the LNO's call is on an MSE line, and the discussions at DMAIN take place face to face.

Be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase. Also, be sure to make a note of all related forms. The interrelationship between events is crucial to the analytical process, and the data collector is best able to appreciate it.

[Note: the instructor should, in conjunction with the class, fill out an IE form (VGT No. 8—Blank IE Form) from the events described above; a correct solution is included.]

Common Mistakes in Data Collection. Here are some common problems in using the Information Exchange form. (Display VGT No. IE-9—Common Data Collection Problems) Some information exchange events may bear a passing resemblance to information handling; it must be remembered that information exchange always includes at least two active parties (one requesting or coordinating and one responding). Information handling has only one active party, the CP reporting (unless the receiving CP has a query). The two types of information exchange can also be confused; remember that coordination always involves the change or the intent to change the battlefield situation. Information exchange deals only with the passing of information; no action on the battlefield is effected. It is important when describing an information exchange not to simply list the participants, or even the subject of their discussion; the outcome of the exchange must also be described. It is always important to list related data sheets, but information exchange in particular is prone to relate to other events, and therefore have many related sheets; be sure to note them.

Keep in mind that information exchanges are complex and can range across many CPs. Sometimes one data collector may not be able to observe all the segments of an information exchange. In such cases, coordination with other observers during data reduction is essential.

IE Quiz

The instructor now hands out the IE Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary

Information exchange is an important indicator of command and control effectiveness. (Display VGT No. IE-10—Summary) Accurate data about the accuracy and timeliness of actions to adjust plan execution or to update information holdings reveal to the ACCES analysts the ability of the staff to assimilate information and either transform it into actions needed to synchronize execution or evaluate its relevance to the current battlefield picture. Observers must be aware of the activities which involve information exchange within the CP and activities to coordinate change external to the CP. Their journals and forms must contain the critical data about the nature of the information exchange, who participated in the information exchange, and when the information exchange took place.

Remotivation

Observers are able to observe firsthand whether information exchange is taking place. Your insights and

observations are essential for ensuring the unit has an accurate perception of the quality, accuracy and timeliness of its information exchange.

Closure

The key elements of information exchange (who, what, when) are recognizable and recordable. These findings contribute to the unit's understanding of its Command and Control performance.

QUIZ

for

“Information Exchange”

True-False

- ___ 1. The division functions that information exchange deals with are mission, task organization, schedule and boundaries.
- ___ 2. Information may be requested by one party, but the information exchange may actually be carried out by someone else (e.g., a subordinate).
- ___ 3. A clarification counts as a type of information seeking.
- ___ 4. Coordination involves action or intended action on the battlefield; information seeking only involves the movement of information.

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

- 5. The CP has received information from a subordinate HQ on topic X that doesn't match its picture of the battlefield; it calls back the subordinate and asks about topic X. This demonstrates:
 - a. information seeking
 - b. clarifying (querying) a report
 - c. coordinating the CPs' information
 - d. getting a retransmission
 - e. [none of the above]
- 6. The CP has received information from a subordinate HQ on topic X that doesn't match its picture of the battlefield; it calls an adjacent HQ and asks about topic X. This demonstrates:
 - a. information seeking
 - b. clarifying a report
 - c. coordinating the CPs' information
 - d. getting a retransmission
 - e. [none of the above]

7. An artillery officer wants to change the location of his battery because enemy guerilla sniper fire is making the current location dangerous. He calls the DIVARTY commander, who checks with the DMAIN to be sure the roads are clear and that the position the battery is moving to is clear of other traffic and fairly safe. The DIVARTY commander's action is:
- a. information seeking
 - b. making a report
 - c. asking for a decision
 - d. coordinating
 - e. [none of the above]
8. The DMAIN broadcasts a message to all units. The last sentence refers to an OPORD superseded eighteen hours ago. The 1st Brigade calls the DMAIN and says "What is this stuff about Blue Dog doing in here? I thought we were operating under Red Bone now!" The DMAIN replies, "Affirmative; the sentence should refer to Red Bone. We are issuing a correction to all units." This represents what kind of information exchange?
- a. coordination
 - b. clarification
 - c. information seeking
 - d. assessment
 - e. [none of the above]

ANSWER SHEET

for

IE Quiz

1. F

2. T

3. F

4. T

5. b

6. a

7. d

8. b

each answer is worth 12.5 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

Information Handling

Lesson Plan: IH

General

The purpose of this instruction is to enhance the data collection skills of ACCES observers who are familiar with command post operations and understand the ACCES methodology. At the conclusion of the instruction, ACCES observers will understand the concept of information handling and will have practiced the skills needed to collect performance data that describe the incoming and outgoing information flows of the unit.

This lesson will require 45 minutes to complete.

Learning Objectives

Task:	Recognize and discriminate among the various incoming and outgoing reports and due times, as applicable.
Condition:	Given unit SOP and examples in training.
Standard:	Report type and subject will be accurately recognized.
Task:	Record information handling events accurately on the Information Handling (IH) form.
Condition:	Given that reports are recognized and that exercise control provides each observer with access to report flow and content.
Standard:	Observers will accurately complete IH forms.
Method	Discussion, examination of common data collection problems, examination of an example of information handling events illustrated by a timeline, practice with simulated events, map reading practice, and quiz.

Presentation Guide

Introduction(Display VGT No. IH-1-Header)

Attention. During the next 45 minutes, we will examine the components of the Information Handling (IH) measures. (Display VGT No. IH-2-Purpose & Methods) Military decision making relies on the timely flow of complete and high-quality information. Most information is provided from subordinate and adjacent maneuver units. This information must be processed, distributed, and assimilated before it is useful to decision makers. ACCES measurement attempts to capture a record of information transactions so that we can develop insights about the efficiency of and effectiveness of the information handling procedures. Units use a variety of means to move their information holdings. ACCES observers are challenged to tap each of these sources and collect the data needed to measure the timeliness and completeness of reports. No single observer can collect all the

necessary data. IH measurements require integration across the ACCES team to ensure that reliable, meaningful feedback can be produced by the analysts.

Motivation. The reporting process, by its nature, involves the highest volume of factual information flowing through the CP. This makes the collection of accurate, detailed IH data a challenging task for the observer. Observers must understand the pattern of information traffic to capture the data, and must understand the substance of the reports in order to appreciate the other C2 activities taking place. (Display VGT No. IH-3--Observer Focus) The Army's investment in automation is evidence of the importance placed on the timely distribution of information. Information which is both timely and accurate has a profound affect on the quality of decisions. With the introduction of the Maneuver Control System (MCS), the ability to observe, collect, and report on information transactions becomes even more critical. ACCES data help demonstrate the effect of automated C2 systems on battlefield outcomes. Therefore, we require precise and complete data collection on which to base our findings. ACCES observers must know what data elements concerning information handling to capture and how to enter data onto the appropriate collection form. This requires a previous knowledge of forms and of the unit's SOP. We will discuss examples and review the key questions related to Information Handling.

[INSTRUCTOR NOTES: The automation of this particular unit should be discussed. As this will vary from exercise to exercise, the instructor needs to create a customized summary and perhaps a VGT appropriate to the current ACCES application. It is also helpful here to include any information available on the unit's reporting standards (times).]

Development

Definition of Information Handling (IH). Information Handling (IH) includes those measures which describe the timing of various types of reports. The measures are built from data about such reports captured on IH forms. ACCES data must reflect incoming and outgoing information processing in order for analysts to understand the unit's capabilities. (Display VGT No. IH-4--ACCES C2 Model) The ACCES model of the C2 process shows reports that bring information into the unit from the environment and carry it out from the unit's internal C2 cycle. Reports tie the environment and the unit together. Reports support assessments of the situation.

To the extent that scheduled reports (reports that must be made at certain regular intervals, per SOP) can be anticipated by the observers, we will collect times and compare them to the SOP standard imposed by the unit and its higher headquarters. (Display VGT No. IH-5--Information Flow) Examples of these scheduled reports are INTSUMs (dealing with enemy forces) and SITREPs (dealing with friendly forces). These reports contain four types of data on friendly and enemy units: identification, location, capability (the strength or equipment of the unit), and combat activity. In theory, scheduled reports should address all these types of information.

Other reports that are submitted on an "as required" basis, called unscheduled reports, are observed to determine lag times in reporting and dissemination of battlefield information and status reports. These unscheduled reports are Unscheduled SITREPs (dealing with friendly forces) and Spot Reports (dealing with enemy forces). Unscheduled reports are interesting for their evidence (both temporal and directional) of information flow, and for the effect their content has on the decision making cycle. Unscheduled reports also contain the four types of information described above, but are not expected to contain all of them.

Most written reports can be obtained by exercise control, and can be cross referenced with those versions found at CPs, if data collectors can capture enough information to identify the latter. If a report is made verbally, you must capture the information on the form. Furthermore, observers should be on the alert for follow-up by the staff, or queries that indicate reports are being questioned, analyzed, and used in the command and control process.

Lastly, these forms are also used to capture the time of incoming directives and the time that incoming reports and directives are "perceived" by the staff of the CP receiving them. The time of report reception is considered to be the time that the report is physically available to the CP staff for examination. Not only is it problematic to consider an unprinted MCS message to have been received, but collecting the time of its arrival in the MCS queue might prove difficult. A report is considered to be perceived if it is seen by or brought to the attention of a "responsible" officer or other staff member. An RTO, log-keeping NCO, or MCS operator is not considered "responsible" in this sense; responsibility requires that the person be someone who can act on the information, e.g., the Battle Captain, duty officer, etc. When possible, obtain a paper copy of the MCS report.

It must be emphasized that the collection of Information Handling data is of secondary priority to the collection of "higher-order" data; i.e., data concerning such processes as decision making, COA analysis, or directive preparation. Certainly, no data collector should pass up an opportunity to gather IH data, if it can be captured without losing other information. But it would be equally regrettable for a data collector to ignore a crucial situation assessment because he was noting down the contents of a spot report or laboriously transcribing an entire SITREP. Whenever possible, hard copies of reports should be obtained to save observers' time and effort.

The IH Form. This slide is the "exploded" version of the IH form. (*Display VGT No. IH-6--Expanded IH Form*) It shows the exact information that should be entered for each datum space on the form. Always be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase.

All reports have originators and addressees; thus the "to/from" and "incoming/outgoing" data. Report types are as discussed above. The times associated with reports are among the most important IH data, as they help build a picture of the efficiency of the unit's reporting systems. Knowing the medium of transmission used for reports allows the analysis of efficiency to be broken down by system. Noting the queries registered in relation

to a report may be useful also, especially if it should happen that the number of queries tends to be unusually high (or low) when a particular system is used for transmission.

As with decisions and assessments, a brief description of report content often makes the difference between usefulness and uselessness when the analysts are attempting to reconstruct the relevant details of an incident or of the entire exercise. Best of all, the data collector can provide detailed information in the blank spaces near the bottom of the form, covering both the content of the report and the content of any queries. This is practical and desirable for most short, unscheduled reports; it is not usually practical or desirable for long reports like INTSUMs and SITREPs.

[Note: The instructor must be familiar with the expanded form, and should discuss all the elements, giving special emphasis to those mentioned above.]

Example of an IH Form: Returning one final time to our scenario, we find several instances of information handling. (Display VGT. No. IH-7-Illustration & Timeline) The situation assessment of 110140 that sparked the decision to counterattack was based on several reports from the field. We will examine two of these.

Between midnight and 0100 on the 11th, OV-1Ds of the division's MI battalion report the Ottokar passes in the hills to the east of the enemy clogged with snow and untrafficable, as a result of heavy precipitation and frequent avalanches. This report is passed on to the DMAIN G-2 section at 110048 and brought to the Asst. G-2's attention a few minutes later (110102). These passes are the MSR and primary retreat route for the enemy's southern regiments. Though weather & terrain reports are not often thought of as crucial and may be overlooked, in circumstances such as this they can be of great importance.

Less than an hour later (110136), the Aviation Brigade passes on over FM a report made by its lead attack battalion, currently conducting a deep-strike mission. The battalion commander has reported destroying what he believes to be an enemy headquarters unit. The G-2 section queries the Aviation as to the location of the kill, and confirms from previous SIGINT and SOF reports that this location was believed to be occupied by the enemy's division HQ. These pieces of information (and others) contribute to the determination by the Asst. G-2 that the enemy is confused, and vulnerable to a counterattack.

As with all forms, be sure to fill out **all** of the header information! This is essential for the reduction step and for the analysis phase. Also, be sure to make a note of all related forms. The interrelationship between events is crucial to the analytical process, and the data collector is best able to appreciate it, since he sees it firsthand.

[Note: the instructor should, in conjunction with the class, fill out an IH form (VGT No. IH-8-Blank IH Form) from the events described above; a correct solution is included.]

Common Mistakes in Information Handling Data Collection. (Display VGT No. IH-9-Common Mistakes in Data Collection) This slide indicates a few common errors made by data collectors. It is important for the

ACCES observers (or the ACCES advance team) to identify the unit's reporting cycles from SOP, so as to be prepared to capture the timeliness of scheduled reports. Very detailed operations reports or spot reports are often confused, respectively, with SITREPs and INTSUMs; this leads to confusion in analysis, as unscheduled reports are graded against breadth and timeliness criteria they should not be expected to fulfill. The importance of recognizing and identifying queries and follow-ups to reports must be stressed. Not only is this activity interesting in its own right, but it may also demonstrate inconsistencies or misconceptions that bear watching, as they may be opportunities (lost or otherwise) for coordination or information seeking.

IH Quiz

The instructor now hands out the IH Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary

Information Handling is one means of assessing the efficiency of the staff and the affect of information on decision making. (*Display VGT No. IH-10-Summary*) Information handling can detract from or support the unit's effectiveness and its ability to fight AirLand Battle doctrine. Information underlies every battlefield function. When it's broken, the C2 process becomes partially disabled.

Remotivation

ACCES observers are able to observe firsthand the information handling process and enable ACCES Analysts to link battlefield reports to specific events or assessments. Your insights and observations are essential for ensuring the unit has an accurate perception of how smoothly information holdings are transferred and updated.

Closure

The key elements of Information Handling (what, when, how) are recognizable and recordable. The resulting ACCES findings will contribute to the unit's understanding of its Command and Control performance.

QUIZ
for
"Information Handling"

True-False

- ☐ 1. Only scheduled reports have a "time due".
- ☐ 2. A report can be received without being perceived.
- ☐ 3. A report can be queried without being perceived.
- ☐ 4. Data on information handling, being the most straightforward, should be collected before other types of data.

Multiple Choice

(In each case, select the single answer that answers the question accurately.)

- 5. The CP receives the report: "The enemy are advancing in battalion strength, vicinity GQ238742." This is:
 - a. a SITREP
 - b. an INTSUM
 - c. an operation report (unscheduled SITREP)
 - d. a spot report
 - e. [none of the above]
- 6. The division SOP specifies a report (called a RUC, or Report on Unit Conditions) containing the location, current strength, and mission of each friendly unit, to be submitted at 1200 each day. This is:
 - a. a SITREP
 - b. an INTSUM
 - c. an operation report (unscheduled SITREP)
 - d. a spot report
 - e. [none of the above]
- 7. Message from Corps to the 21st Division: "5th Division has reached the river and is prepared to commence CONPLAN Franklin." This is:
 - a. a SITREP
 - b. an INTSUM
 - c. an operation report (unscheduled SITREP)
 - d. a spot report
 - e. [none of the above]

ANSWER SHEET

for

IH Quiz

1. T

2. T

3. F

4. F

5. d

6. a

7. c

each answer is worth 14 points

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

OBSERVER TRAINING

ACCES Preparation

Lesson Plan: AP

General

This lesson is designed to provide the framework for the environment in which the ACCES application will take place. The lesson addresses pre-exercise activities and offers an example of a typical exercise day. Finally, the lesson summarizes exercise-unique administrative data that must be "filled-in" by the trainer through coordination with the Exercise Director's staff.

This lesson requires 60 minutes to complete.

Learning Objectives

- Task: Observers will become familiar with the pre-exercise activities necessary to conduct a successful ACCES application.
- Condition: Given this presentation, the exercise orientation and administrative instructions from the training unit's Exercise Director staff, and the student handout.
- Standard: Function as a team.
- Method: Discussion

Presentation Guide

Introduction

Attention. Those inexperienced with ACCES data collection are most likely to be concerned about the intense exercise phases during which the tempo of activity may overwhelm the collection process. (*Display VGT AP-1--Headliner*) Experienced observers know that the key to effective collection during these chaotic periods is what has gone on before them and what will follow afterward. This does not simplify the collection process, but it does make effective observation more likely. Our discussion will trace activities in a typical day of an observer.

Motivation In the preceding lessons we have described what's, how's, and why's of data collection. Let's take one more look at the process and link these techniques to individual performance.

Development

Pre-exercise Activities

Developing the knowledge base is a major focus of pre-exercise activities. (*Display VGT AP-2--Purpose*) Participation in observer training, research of the plans and orders of the training unit, and review of exercise documentation are all essential components of the observers' preparation. To be most effective, these preparations are best made at the collection location. The ACCES coordinator will ensure that a support structure is in-place to facilitate this portion of the observers' preparation. For example, security clearances and rosters should be

submitted, a provision for message distribution should be made, the need and role of ACCES data collection should be promoted so the staff cooperates with data collectors, and the division SOP and the rules of conduct for the TOCs should be ascertained. A pre-exercise visit to the command post is essential. This visit is used to familiarize observers with key personnel and key locations, and to map the environment so that observation is unobtrusive.

Exercises often involve a one or two day period during which communications are established and checked. This pre-exercise period is used by the unit to establish its physical command and control configuration. Exercise staffs may be installing databases, preparing documents, developing the enemy situation and conducting communications checks. These periods place minimum demands on the command post. Therefore, it is not unusual for the unit to conduct organizational meetings to discuss exercise goals, procedures, and operations. ACCES training will be taking place during this time. During this "build-up" period, observers also introduce themselves to and interact with the members of the staff. This allows them to explain what the ACCES team is doing and demonstrate that they are not evaluators and therefore not a threat to the unit. The key outcome is to establish your role and the need for access. Exercise message traffic will begin well before the scheduled start of play. Even on the first day, message traffic will result in changes to unit status and plans. Observers should note these revisions so that a baseline for evaluation is clear and unambiguous. Finally, the Commander may request (and usually receives) an early morning briefing on the day the exercise begins. This presentation is well rehearsed and will provide valuable insights into the exercise. Observers should attend the dress rehearsal of this last event prior to the exercise.

Observer Responsibilities

While all ACCES observers need to be familiar with the full range of issues, measures, and data reduction sheets built into the system, there are meaningful differences in the responsibilities of observers in different locations, the observation opportunities likely to occur in different parts of the command and control system, and the kinds of ACCES materials each observer is most likely to encounter.

The brief descriptions below highlight some of the differences likely to be encountered by observers assigned to specific locations in a division level exercise. (*Display VGT AP-3--Assignments*) Normally, ACCES staffs seven different types of locations: (1) exercise control (EC), (2) division main (DMAIN) Operations (OPS), (3) DMAIN Plans, (4) DMAIN Intel, (5) DTAC, (6) Division Rear (DREAR), (7) one or more brigades. At times, observers may also be located at corps, in the fire support element of DMAIN, or in other supporting elements of the DMAIN.

Exercise Control. The primary responsibility of observers in control is to capture the "ground truth" for the exercise. This includes as much written material as possible concerning unit locations, activities, status, and strength for the information handling measures. In addition, the control observers must capture Red intent, so

that Blue side situation assessments captured at other locations can be assessed. Exercise Control observers should have a grasp of the flow of the exercise so they can identify significant events and assist other observers (noting periods of confusion, learning the delay from event occurrence to its reporting and perception in different command centers, etc.). The EC observers also collect copies of written plans, orders, mission statements, etc. When corps, some brigades, or other command centers of interest are not staffed with an ACCES observer, the EC observers monitor key events in these locations. Comments by the exercise controllers or umpires about problems the unit is experiencing should be noted and provided to the relevant positional observers. In addition, errors in drafting orders, role overlaps, and contradictory activities should be noted.

Normally, the analysts will be used to cover EC. One analyst per shift is adequate when the exercise is supported by a computer system that can provide periodic unit situation summaries for both Red and Blue forces. However, if a board game is used, and this information has to be tracked manually, two analysts per shift (and three if Red forces are observed separately) may be needed.

Analysts acting as control observers are also responsible for the effective use of the ACCES observers and extracting their data in a useful form. For example, they will highlight measures or situations of particular importance before the exercise. They must ensure that the information handling data are taken at the same times in all locations so the information congruence measures can be calculated. They should ensure that a map and overlay with the key terrain features are available during data reduction and should lead the timeline discussions, which means they must understand the flow of the exercise from start to finish. During data reduction the control observer(s) provide ground truth for evaluation of situation assessments, predictions, and plan quality. In addition, these analysts review the data reduction forms for quality, clarity, and completeness.

In order to assess the subjective elements of command and control effectiveness, control observers must also collect enough information to judge the degree of proactiveness of each decision made, which probably requires discussion with the observers who watched the decision making process.

DMAIN G-3 OPS. Because this command center is responsible for maintaining the big picture, conducting the deep battle, and looking out up to 48 hours, the observers in this location are normally busy and will see a wide variety of ACCES information. At the information handling level, they will find status boards and maps designed to keep the G-3 and Commanding General (CG) up to date. G-3 OPS receives a lot of spot reports and often monitors the current battle. Normally, the SITREPs are addressed to G-3 OPS and the Division SITREP to Corps is developed and sent out from there.

Within G-3 OPS the action often centers around the senior person present. When the CG and G-3 are elsewhere, the Battle Captain will take charge. Observers should be alert to "huddles" where two or more people cluster around a map or in a corner to discuss a situation or issue. In addition, the arrival of a senior person, a change of shift within the G-3 OPS cell, or the arrival of a senior visitor will often result in a brief summary of

the situation. When not covered by another observer, the G-3 OPS observer should attend formal briefings to the CG, which normally take place in a command module near G-3 OPS. Meetings with liaison officers (LNOs) and discussions with G-2 (Intelligence) representatives also offer good opportunities to capture situation assessments.

Some decision cycles will originate in the G-3 section, but they may continue elsewhere. Capturing who is involved in them, the situation assessments they involve, the courses of action considered, and the consequences that are foreseen for each of them are important. Vision into the future (how many hours ahead the staff is forecasting and planning) is an important issue. G-3 OPS is also one of the places where observers are likely to detect inconsistencies in the C2 system -- contradictory orders, different perceptions of the situation, and so forth. Times when decisions are made and directives issued (the G-3 normally signs OPLANs and FRAGOs, and many warning orders originate here) are also important. Finally, queries and coordination with other command centers (corps, DTAC, brigades, division artillery, etc.) often originate in this location, particularly when the G-3 or CG is present.

DMAIN Plans. The Plans section normally looks 48-72 hours out and examines situations where the mission is known but alternative ways are available to achieve it. Clearly the Plans observer is responsible for those parts of the decision cycle that occur in this section, beginning with the situation assessment that drives the process. Observers should strive to understand the motivation or stimulus behind each plan as well as the missions it supports, including the commander's intent. Assessments of the Red situation and of Red courses of action, understandings concerning the capabilities of Blue forces, availability of assets or support from other commands (particularly corps), and the impact of terrain and weather are all potentially important.

During the planning process key issues include: (1) which staff sections are involved or consulted (including those at other echelons), (2) how many individuals are involved in the planning (at least one from each section involved), (3) what courses of action are considered (not just how many), (4) whether the consequences of each of them is considered, (5) predictions of the consequences of actions, and (6) what course of action is recommended. Sometimes a briefing is prepared for the CG or Chief of Staff (COS) which may be practiced in the Plans section, or actually given there. Consultations across sections (with G-3 OPS, G-2, etc.) are also valuable sources of insight, as are shift change briefings or discussions. Plans observers should also seek to obtain copies of key graphics and planning documents. Be certain the date-time groups are noted on them. The time into the future for which the unit is planning and forecasting enemy actions and own force efforts is also very important.

Plans observers should also be alert to efforts to obtain basic information from other sections, which are information exchange actions. Not only is what was sought important, but also the answer received and the time required to get it.

DMAIN G-2. The bulk of the material G-2 observers will see is information handling and situation assessment. Obviously there are both organized intelligence documents (INTSUMs, target lists, etc.) and large numbers of enemy spot reports to be captured. The latter may be written (from other intelligence cells, etc.) or verbal (from units on the scene). Situation assessments (generalizations based on facts) are less common, but more important. Those expressed by the G-2, offered during discussions with other staff cells (G-3, fire support, etc.) or in the presence of the CG or COS are very important. How far into the future the G-2 staff looks is also very important.

Less common, but also important, are decision making, queries, and information exchange issues. Most G-2 decision making deals with plans and orders for intelligence tasking and collection. In some G-2 shops, deception plans are developed or discussed. Queries will arise when information appears incomplete, inconsistent, or perhaps incongruous. Both the fact of the response and the time required to get it are important to note. Incongruence occurs when there are differences between the fact base, general understandings, or perceptions of Red intent between command cells. These are relatively rare, but stress the decision making process severely. Disagreements, information seeking, and requests for clarifications are often quite loud and energetic.

Discussions with other command centers are important sources of data, particularly on understandings and Red intent. Sharing of data with DTAC, G-3 OPS, and brigades are all very important interactions and should be noted. When a written product is sent, the observers should seek to capture a copy.

DTAC. Observers in DTAC will have the richest view of the current battle from Blue's perspective and often have the most data at the end of the exercise. This command center fights the current battle (less than 12 hours into the future) except for the deep battle controlled by G-3 OPS. However, it is also involved in the deep battle and will be the scene of considerable decision making. By doctrine the ADC(M) (Assistant Division Commander for Maneuver) will be the senior person in the DTAC, but the CG and COS may well appear there at any time. As in G-3 OPS and G-2, significant new information will tend to flow to the Battle Captain.

The maps in the DTAC are hard to get close to, but they are also among the most important to check for currency, completeness, and accuracy. Unit status data are perishable in the current battle and must be updated regularly. At the same time, there will be a large number of situation assessments, usually in informal discussions. Similarly, DTAC status boards are important since they can mislead decision makers unless they are managed well.

Many of the issues that arise in the DTAC are settled there, creating small decision cycles within the larger division plan and decision cycle. These will include problems involving a single brigade, task organization issues, creation or commitment of a reserve force, etc. In an effective division, many of these will be activations of contingencies. Key decision information (stimulus, participants, courses of action, predictions, decision-directive consistency, decision time, etc.) should be captured as well as the warning order and directive preparation time

when the cycle stays in the DTAC. Copies of directives and transcripts of verbal orders should be captured. The time into the future the DTAC looks when projecting its own actions and those of the enemy is an important issue.

DTAC receives a large number of spot reports and operation reports from the current battle, and seeks a good bit of information, both so it can keep its information base current (questions about unit capabilities and progress of the battle) and so it can manage the current battle (fueling coordination actions to ensure assets are available, units move in a timely fashion, etc.). Understandings (situation assessments) usually emerge in discussions of issues. Courses of action are often discussed informally and rapid decisions where only a single course of action is considered are not uncommon.

DREAR. Normally the Assistant Division Commander for Support (ADC[S]) will run this command post. In a few units it will still be referred to by its older name, the Rear Area Operation Center (RAOC). The DISCOM commander and the G-4 are also likely to be present and one of them will run the center in the absence of the ADC(S).

Observers in DREAR will see and hear less about the current battle and more about the future plans that the division logistics structure will have to support. There will be queries from the DMAIN and DTAC about the availability of assets, and responses to these should be tracked closely. Unit losses (personnel and equipment) as well as requests for specialized assets normally kept in the rear (the bridging equipment, chemical munitions, etc.) will operate as stimuli for DREAR decision making. This will involve (1) finding assets (within the division reserves, by cannibalizing line items within the division, from adjacent units, or from corps or echelons above corps), (2) figuring out how to acquire or task them, or (3) movement control plans to get them where they are needed. Solving maintenance problems for key systems may also force decisions. These will be genuine decision cycles, but they will deal with DREAR's problems within the context of the larger division and corps plans.

The DREAR will have a great deal of interaction with the corps headquarters and will both make queries to them and respond to their inquiries. Perceptions of the situation, particularly about the status of Blue units, will be expressed and may be out of date because distribution of reports is slow or incomplete. In addition, the DREAR should have the longest view into the future since it must foresee Blue needs well in advance.

This organization is supposed to be able to take over the battle if the DMAIN and DTAC are both knocked out. As a result, the DREAR should be monitoring the current and deep battles, Red capabilities and intent, as well as the CG's intent and concept of operations. Congruence of information and situation assessment between DREAR and other command centers is often a problem area, so collection of perceived situation information is important. In many cases, the processes of decision making in DREAR will have very limited timing parameters so that roads or air assets will be used efficiently, which means quite specific forecasts are made of future situations.

Brigades. Maneuver brigades are similar to the DTAC (except that the scale is smaller), in that the whole battle (intelligence, operations, and support) funnels through their command posts. Therefore, observers in maneuver brigades will have similar responsibilities to those of DTAC observers, including the responsibility to capture perceptions of Red intent and the vision of the unit into the battle's future. The pace is rapid and many of the decision cycles are brief and focused on specific battlefield situations. Brigades send and receive large numbers of spot and operation reports as well as regular SITREPs and INTSUMs. They also process a large volume of coordination actions and queries.

The largest volume of information flow within a brigade comes from its subordinates (which ACCES does not normally observe), followed by DTAC and DMAIN. Most of this is information handling, but the situation assessments expressed are very important. Very often problems develop with information flow from adjacent units or with units that are supporting or coordinating their actions with the brigade. Observers should be alert to inconsistent perceptions and directives, which usually result in vigorous discussions with other command posts. In addition, shift change briefings are very important in brigades.

The CG will often visit brigade command posts, in which case a briefing is normally in order. This may lead to a discussion of alternative courses of action or a decision cycle to resolve problems. Similarly, LNOs and senior officers who have visited the division command centers may come back and relay what they have learned.

Finally, brigade observers should pay close attention to directives issued or received by the unit, including the times they are sent and received. Decision-directive consistency, clarity (absence of queries), and the time needed to prepare directives are all normally available to the alert observer.

When an aviation brigade is covered, the ACCES observer will need to observe the upkeep of key status boards on which crew rest, aircraft availability, POL (petroleum, oil, and lubricants) availability, etc. are tracked. In addition, aviation brigades must look further into the future than ground maneuver brigades because of their greater need for logistic support during combat.

Other Observation Positions. During specialized applications, observers may be put in other locations. Probably the most common alternative is to place an observer in the corps command post so the division's activities and reports can be seen from a different perspective. This is a simple case since the corps command center structure generally follows that of the division. Hence, observers assigned to Corps G-2 can use the general guidance for a DMAIN G-2 observer, a Corps OPS position the DMAIN G-3 OPS guidance, etc.

Most of the lower level sections are specialized elements of a division command center, such as the Fire Support Element or Chemical Warfare Section. Observers in these locations should determine: (1) what information handling tasks are conducted (for example, chemical warfare units plot the time and location of strikes and create warning messages and alerts), (2) what situation assessments are routinely handled (for example, the fire support element may assess the artillery threat in various sectors), and (3) what decision cycles occur here.

These locations are very likely to be at the center of some important information exchanges, as the commander attempts to maximize the effect of these force-multiplying assets.

At the same time, general information that shows how well this element is plugged into the division overall is also very important. Hence, the age, completeness, and accuracy of all maps and status boards should be assessed. Similarly the times and contents of status reports, directives received or issued, queries and query responses, as well as information exchange activities should be recorded. Capturing situation assessments will also allow the ACCES team to track the consistency of information throughout the C2 system.

Typical Exercise Day

Most field training exercises are sustained 24-hours-a-day events which last for several days. (Display VGT AP-4--Typical Day) To support these exercises, observers normally work 12-hour shifts. At times, these may be longer. For example, it is not uncommon for staff officers to continue work on future plans; to the extent that this may involve meetings and discussions, the observer should maintain continuity and observe.

Observers should agree on a time to be in position, usually at least one-half hour prior to scheduled staff shift changes. This will ensure adequate time for observers to conduct a handover of current and pending actions prior to the staff's handover process. The image of professional, consistent, and persistent collection is enhanced when the ACCES team pulls the same long shift as the training unit staff. That image is tarnished if observers appear lazy. Moreover, many key decisions are made early in the shift. Briefing rehearsals conducted prior to the staff handover (and other planning and decision milestones) are rich in mission information, planning issues, and other items important to the observation effort.

Observers should review the situation maps, the status boards, and the significant message traffic sent or received during the previous shift. They provide a primary source to identify new developments, concerns voiced by other commands, or insights about where to position the observer. Staff officers tend to caucus during early shift hours to identify problems and discuss options or limitations on specific courses of action. The Battle Captains are actively seeking to gain control over their functional areas and are reviewing current perceptions in order to focus on changes required for future operations.

There are periods of high activity throughout the day, ranging from command briefings or conferences, the outbreak of hostilities, events initiated by the enemy, to offensive actions initiated by friendly forces. These periods of high activity are based upon predictable events (found in the exercise scenario plan) or are results of friendly decisions and directives. Observers need to discriminate between high and low activity levels. Periods of low activity can be used to develop detailed notes on understandings, status boards, and situation maps.

Remember, the goal is to record the understandings and perceptions that drive decisions. (Display VGT AP-5--The Goal) Observers should position themselves near the senior officer in the CP, unless the senior person is working alone. Try to accompany the staff who leave the CP to confer with the Commander or other key

decision makers. Knowledge of new information or emerging ideas is second priority. Observers can maintain awareness of current information by monitoring message traffic or visiting the distribution center or G2/G3 operations. Each time a situation is explained or briefed (e.g., updates to VIPs, discussion with liaison officers, shift changes, or explanations of new developments) the observer should recognize the collection opportunity and monitor the key activity.

Observers should always strive to prioritize collection opportunities. Only in slow periods will there be a single collection opportunity presenting itself at one time. Usually a variety of events will be on-going, that will require the collector to choose between them. In such cases, the rule of thumb is to follow the highest-order process. The closer in the ACCES C2 cycle an event is to the Processing of Directives, the higher order the process. For example, if a report is arriving at the same time an assessment is being delivered, most often the collector should concentrate on the assessment. Certainly, circumstances will arise when the judgement of the collector is required to determine what event should be tracked; and, in some cases, an observer can collect two simultaneous events (e.g. if a report arrives from a tactically-important location just as a decision is being made, note the DTG of the report and read it later).

This is the standard journal form for note-taking. (*Display VGT AP-6—Journal Form*) Note-taking should be organized to support analysis. Notes should provide a clear, consistent record of the chronology of events. The use of date and time groups (DTGs) to reference a message, rather than attempting to copy the content, is efficient and effective. Notes may include comprehensible abbreviations that are defined in a legend. The emphasis is on reliable data collection which can be used by a number of analysts. Precision should never be sacrificed or compromised. The timing of events and the entry of flag officers or senior staff should be recorded. Diagrams and illustrations that link or describe major events may be used.

Procedural flaws or confusion should be recorded. Unanswered radio calls, messages that sit unread in distribution, outdated SITMAPs and status boards should be noted. When corrective actions are taken, they should be noted too. Care should be taken to record these types of shortfalls with discretion. Members of the staff may wish to read your notes (and should be allowed to), and observers should avoid phrasings that appear to make critical judgements or evaluations.

Change of Shift

(Display VGT AP-7—Shift Change)

Observers are part of a team. Each member must be considerate of the others during shift changes. The following guidelines should be followed to ensure a smooth transition and effective data collection throughout the exercise.

[Note: in some applications, observers pass through an Application Control Center when going on- and off-shift. This procedure can be used, depending on the exercise circumstances, to touch base with the ACCES OICs, get

updated on the exercise and real-world division affairs of importance, cache classified material and/or data (notes, journals, coded forms, hard copy captured in the CP, etc.), pick up emergency messages, etc.]

Departing Shift. Approximately one hour before the scheduled relief time, start making notes on the items that should be passed onto your relief. At a minimum, the following items should be briefed:

- key decisions during the shift
- open actions
- decision cycles initiated but not yet completed
- current situation
- location of the Commander or Chief of Staff
- expected time of return of the Commander or COS
- who is in charge
- knowledge of planned actions.

Such discussions should be conducted as unobtrusively as possible, preferably out of the CP area. Observers should take care not to conduct them in the presence of CP staff; it only takes one misunderstood remark or incautious comment to destroy good relations with your CP. All notes should be reviewed for classification. Classified materials must be safeguarded in accordance with (IAW) security regulations.

All notes should be reviewed and clarified to facilitate their transfer to data collection sheets. All data collection sheets completed should be reviewed for clarity and accuracy, and open sheets made legible for the next observer. Identify the initiation of decision cycles. Review notes to identify questions requiring follow-up or which have to be discussed with other observers. Identify recommendations for improved command and control system performance.

Double-check to ensure you have left no trace of your presence in the CP (coffee cups, mud, straw, discarded forms, etc.). Remember that ACCES data collectors are unobtrusive.

Locate and collect those data that you may be responsible for transporting from the CP, such as message traffic, journals, overlays, or briefing charts.

Arriving Shift. Observers should arrive at the relief site before the scheduled relief time; the amount of time is left to each team to agree upon, but 30 minutes is suggested as a minimum. This additional time is needed to assess status boards, read the latest message traffic, receive a handover briefing from the outgoing observer, and study the current situation. These tasks should be accomplished before the departing observer has left, so that he can attempt to clarify any confusion.

The arriving observer should assist in last-minute tasks, such as collecting the needed hard copy message traffic. This cooperation between shifts will expedite shift handover and serves to build cohesion within the ACCES team.

The arriving observer should advise the departing observer when he is ready to assume his duties. This precludes overcrowding in the TOC and allows the outgoing observer to get sufficient rest.

When time permits, the ACCES supervisors should meet following each shift to discuss the day's events, to briefly examine notes, and to determine whether upcoming events should be brought to the attention of observers. These informal coordination meetings should last less than 30 minutes.

Instructor's Note: The following section deals with matters that routinely change from one ACCES application to another. What is permitted in one division is unacceptable in another, and the same is true from one CP to another. Determining the specifics for the following material is a crucial part of the application preparation phase. The bullets presented below are standard topics of administrative detail, essential to the smooth completion of an ACCES application. Ascertain the division SOP for each of these points before training, and facilitate discussion of those arrangements that need to be made by the data collectors (e.g., carpool shifts, POV drop-off points, etc.)

Administrative Information

Division Key Personnel

(Display VGT AP-8--Key Division Personnel)

- CG, CofS, ADCs, Bde. and other commanders
- division staff (G-3, G-2, assistants, battle captains)
- non-standard organization, titles, etc.

(Note: some of this information may be unobtainable, may change at the last minute, etc. The post telephone directory may provide more detailed organizational information than the unit liaison.)

ACCES Positions

(Display VGT AP-9--ACCES Team Roster)

- Individuals listed by location and shift ,
- ACCES OICs, senior observers, etc.,
- Emergency phone #s, room #s, locations.
- Initial CP locations. (Display VGT AP-10--CP Locations)
 - Division (has/has not) authorized our team to use POVs to transit from the cantonment area to the field sites.
 - POVs are never to be parked in the vicinity of the CPs. Locate approved parking areas. Park and walk.
 - Use/do not use filtered flashlights in the dark. (Preferred lens color?)
 - We expect that each CP will displace at least ____ times during the exercise. This slide depicts projected displacement times. We won't know about the new locations until they have been reconnoitered. Pass the word if you learn of moves.

Regulations(Display VGT AP-11--Regulations)

- Safety comes first.
 - Subject to the same fatigue factors as other exercise participants,
 - Observe all posted speed limits and adjust driving speed according to conditions.
- Security badges
 - To be visible at all times during the shift,
 - When off shift, badges will be kept in safe place and not worn.
- Password system
 - Check familiarity of observers with procedure.
 - When coming on-shift, check with the ACCES OIC to verify the sign and countersign; when coming off-shift, bring in the next sign/countersign to the ACCES OIC.
 - This is classified information. Take it seriously!
- Food, Drink, Smoking & Other Fraternization.
 - Most units have a rule that there will be no smoking or eating in any TOC. If you need to smoke, eat or drink, do it in an authorized break area.
 - Join coffee funds if you drink coffee in the TOC.
 - Unless special circumstances exist or it would be rude to avoid doing so, do not accept anything from the unit that would make you a burden to them (transportation, rations, etc.)

Conclusion(Display VGT AP-12--Conclusion)Final Summary

During the past two days, we have examined the role and functions of the ACCES observer. The ACCES team is made up of observers and analysts who are providing meaningful feedback to the division commander. As part of the team, each observer works directly with the training unit. Each observer operates as part of a mutually supportive network of professionals. This means: be on time for the sake of your team, be thorough and accurate for the sake of quality, and be invisible and don't interfere for the sake of training.

Remotivation

This exercise provided insights into the Army's most advanced process measurement methodology. Let's use every opportunity provide value-added to the unit's training experience. Any final comments or questions? If not,

Closure

You've been a great audience. Keep you journal forms dry and your eyes open.

STUDENT HANDOUT

Lesson AP

"ACCES Preparations"

Prepared

It is not possible to walk into a CP and begin taking high-quality data without a prior understanding of the exercise environment. The observer must take the time and make the arrangements to know what is knowable. It is not unusual for some observers to be more aware of key aspects of an exercise than many of the participants. Among the things it is possible to know, and that the observers need to master in advance, are:

- the order of battle, both for friendly and enemy;
- exercise objectives and points of emphasis in training;
- the flow of exercise events;
- existing plans and significant message traffic relevant to them;
- the terrain involved in the exercise;
- the organization of the exercising force and its relationship to other commands;
- the physical layout of the CP, message center, or other relevant activity sites;
- the basic work process used by the staff;
- routine schedules, orders, briefings, plans, intelligence summaries, or other CP products; and
- the principles of ACCES and the process of data collection to support ACCES analyses.

Any of these factors that the observers do not know in advance will take time to learn during the exercise and distract from the main task of gathering information.

In addition, being prepared includes the simple procedural responsibilities essential to maintaining continuous presence. Having supplies (collection forms, clipboards, writing instruments, etc.) is obvious, but essential. If breaks are to be taken for meals, having a schedule for observer rotation and arrangements for use of the mess facilities are important. If no breaks are expected (many observers find that significant decisions are often made during meal breaks), or if only one observer is at the site, having candy bars or other "snack food" available becomes important. Similarly, ensuring unobtrusive access to a message file and automatic collection beforehand frees up the observer during exercise play.

Persistent

The quality of data obtained is directly related to the observers' efforts to collect it fully. Excellent observers have established their need for access before the exercise begins and ensured that the commander and his staff are fully aware of it. During the exercise, they must assume they are welcome to listen in on any relevant conversation. By asserting their access early, they accustom the staff to their presence and remove the question of later access. At times, this means accompanying a Chief of Staff or Operations Officer to a decision meeting.

During briefings and decision discussions, the observers must position themselves where they can hear. This may require teamwork on large staffs. In addition, the principle of persistence requires that the observers not become distracted but focus on the key perceptions and ideas that are voiced during decision making. Reading over the Operational Officer's shoulder, listening as an Intelligence Officer explains a new unit sighting at the map, noting a radio call unanswered, etc, require a determination to know what is going on. The continuous presence of observers is one of their unique characteristics and provides a basis for many of ACCES's most useful measures.

Polite

Observers are guests in the CP and should behave as though they understand this. The purpose of the exercise is training, with assessment being one form of feedback on its effectiveness. Observers should be ready, if requested, to explain what they are doing and why, and to provide reference to (a) the messages or other sources that provide the reasons for their presence, and (b) a point of contact for briefings or other information on ACCES and its products. Thanks are due to the Commander and those of his staff who supported the observers, and should be provided at appropriate opportunities and at the end of the exercise.

Alert

CPs are busy places. By being familiar with the physical layout and work processes of the staff under study, observers can learn to detect the presences of new information or new action items. Early in the exercise, excellent observers learn the names and faces of key participants so they can follow events more easily and make notes that trace the flow of information or action. It is not uncommon for an observer's journal to note radio calls that went unanswered, periods of time during which new data or enemy locations were not posted to maps, or other simple errors that would otherwise go unnoticed.

Unobtrusive

Observers must find ways of blending into the background. Their personal belongings (coats, briefcases, etc.) need to be stored out of the way (invisible to the staff). They must find places to stand that do not interfere with the work flow or block the view of status boards, maps, or other decision aids. They do not interfere with the flow of the exercise, by providing either warning of upcoming events or feedback on performance. They may inquire, at a time and place that does not intrude on the exercise, why a command took a particular action, but they may not ask why an action was not taken. Asking why something was not done is tantamount to suggesting a new course of action, which is interference.

Efficient

The amount of activity in a CP can be large; observers who are not efficient will be overwhelmed. Being prepared, meeting the players, and knowing their roles will help. There also are several simple procedures that will save time. For example, a blank template can be developed for status boards in the CP and filled in during

"quiet time." The notes on action status updates then can become recording by exception -- focusing on the changes and their timing.

Note-taking can be speeded up greatly by the use of acronyms or initials, but only if the observer keeps notes on the meaning for later interpretation. Written messages should be referred to by date-time-group, which will allow their identification during the analysis phase. Many experienced observers also annotate their notes to identify key items (Understanding = U, Decision = D, Alternative Action = A) and put in comments about procedural errors (unanswered radio call from ___, new position for a Tank battalion not plotted for 45 minutes, etc.) This saves considerable time later in generating data sheets.

Security Conscious

Having established appropriate need-to-know prior to the exercise, observers must remember that they are outsiders and therefore represent a potential source of security problems to the command. Awareness in this area is high. By establishing ahead of time where materials can be stored, making observer notes correctly, and using proper storage procedures, the observers help prevent such issues from arising. Exercises often involve security materials for which observers may not be cleared. Obviously these proper limits should be respected. At the same time, cleared observers with established need-to-know can and should persist in gaining access. Notes must be handled properly for the information they contain. Visible security awareness is an essential attribute of effective collection.

Professional

The staffs are composed of professionals. Their respect can be earned only by professional behavior. The long hours both groups must work during exercises is one form this takes. Being prepared is another. Maintaining a posture of interest and learning the "jargon" of the staff also aid communications. Little things, such as being on time (or early), delivering on small requests (arranging an ACCES briefing), and answering questions even when it requires that you go out of your way to get the information, go a long way in this arena. Do not express opinions or render judgments on topics beyond your personal experience or expertise. Defer requests for feedback until after the analysis is completed. Do not, in attempting to be obliging, do the staff's work for them!

Consistent

The continuous presence of observers allows collection of compatible data over time and across situations. This opportunity is wasted unless each observer makes notes on the events at hand and takes the time, both during exercise play and while completing data sheets, to ensure consistency of scoring. Seeking help from senior ACCES team members and comparing notes with other observers can help here.

A Team Member

Collection of data is a team effort. At the multi-observer locations such as DMAIN, observers should operate

as a team and cover for one another when heavy activity occurs in one arena while others are less active. At Brigade level this is not possible, but observers should be alert to noting items from other commands that may prove valuable to the overall collection. For example, a directive that causes confusion, consternation, or delay may look perfectly clear at the headquarters that issued it unless queries, confusion, or objections are recorded at the receiving locations. All observers should be alert to the importance of information and perception comparability.

During the data reduction and analysis phases, the team role of observers becomes obvious to all concerned. Unless notes have been kept with that in mind, however, the reconstruction of important control cycles becomes difficult and time-consuming.

Positive

The tone conveyed by an excellent observer is positive and helpful. Success is expected both from the exercise and the collection perspective. Notes are taken in positive terms. Notes should be made on possible solutions to problems observed (but not presented until after analysis--see "unobtrusive"). Whenever possible, reports and feedback should be complimentary. Credit should be given to staffs that solve their own problems, improve procedures during the exercise, and/or exhibit obvious learning. Here again, the assumption of excellent working relationships and effective performance will be helpful.

An Observer, Not an Evaluator

ACCES is designed to answer difficult questions about the processes and effectiveness of complex decision processes. Observation is the initial process of capturing information. After data reduction, analysis, and review, this information is capable of answering questions and generating insights of value to military professionals. ACCES observation is not an evaluation process, nor are observers necessarily qualified to evaluate the staffs they see. Certainly they cannot do so based on the unprocessed information or in the absence of the data being collected elsewhere during the exercise. Excellent observers are aware of the limits of their information while on site and behave accordingly. They defer comments on performance until after analysis is completed. In addition, they:

- refer requests for information to senior ACCES team members
- do not tell the staff or commanders how they (the observer) would prefer to see things done or how they would operate; and
- do not discuss exercise performance where the participant can hear them.

There are professional officers whose job is to critique exercise performance based on approved tactics, procedures, and doctrine. They are field evaluators; ACCES observers are not.

WHAT IS C2 ?

A-117

Army Command and Control Evaluation System

Purpose and Objectives

- To develop a common understanding of C2 by consistently using doctrinal sources to *define command and control processes* and by discussing C2 concepts.
- To *introduce* the Army Command and Control Evaluation System (ACCES) as a *process measurement tool* by highlighting the collective behaviors associated with planning military operations.
- To *lay the groundwork* for future instruction by illustrating the relationship between C2 doctrine and the ACCES methodology.

Dynamically Complex,
Interdependent
Battlefield Pictures
Over Time

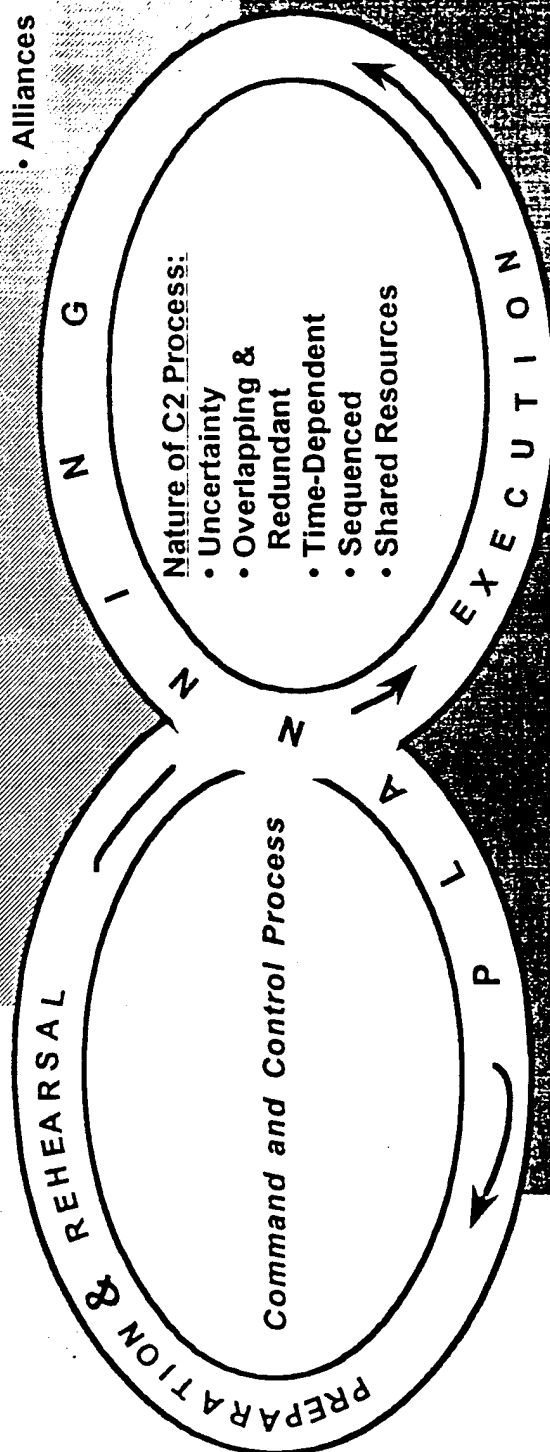


Information Contexts

- Commander's Intent
- Directives
- Monitor/Control
- Assessments
- Coordination

Political and Operational Contexts

- Joint
- Combined
- Coalition
- Alliances



Technical Contexts

- METT-T
- Doctrine
- SOPs

Army Command and Control Evaluation

System

Definition

C2 Process is a time-dependent, sequence of tasks that includes:

1. entities that perform the task
2. arrangement of organizational units
3. relationship between each pair of units that make up the process
4. links to other processes
5. resources consumed to perform the process

Army Command and Control Evaluation System

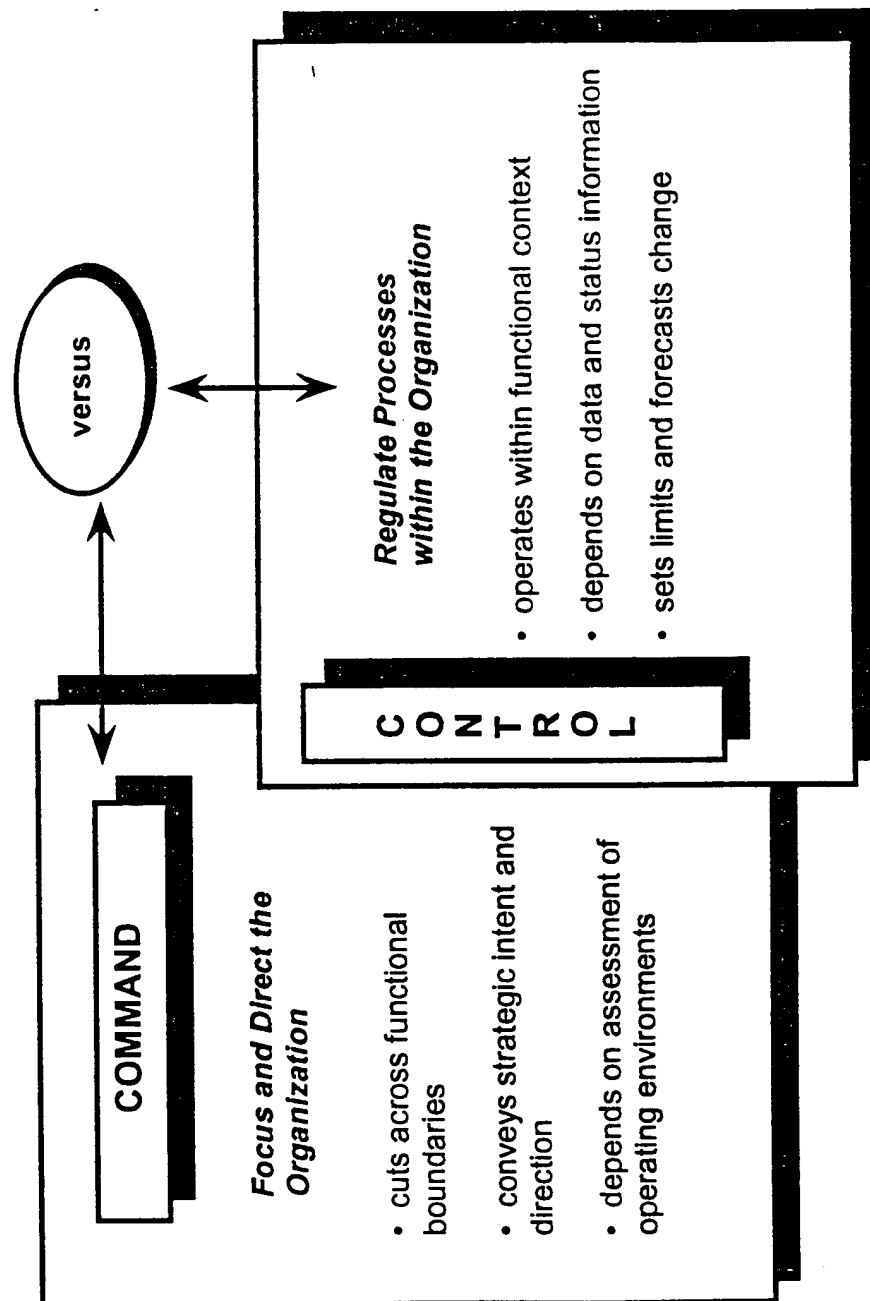
Assumptions about C2

- C2 is a process, a time-dependent sequence of tasks that is governed by a process law.
- C2 process operates to accommodate change in dynamically, complex operating environments.
- C2 assessments must be structured within a doctrinal framework.
- C2 serves to integrate interdependent variables that contribute to battlefield outcomes.

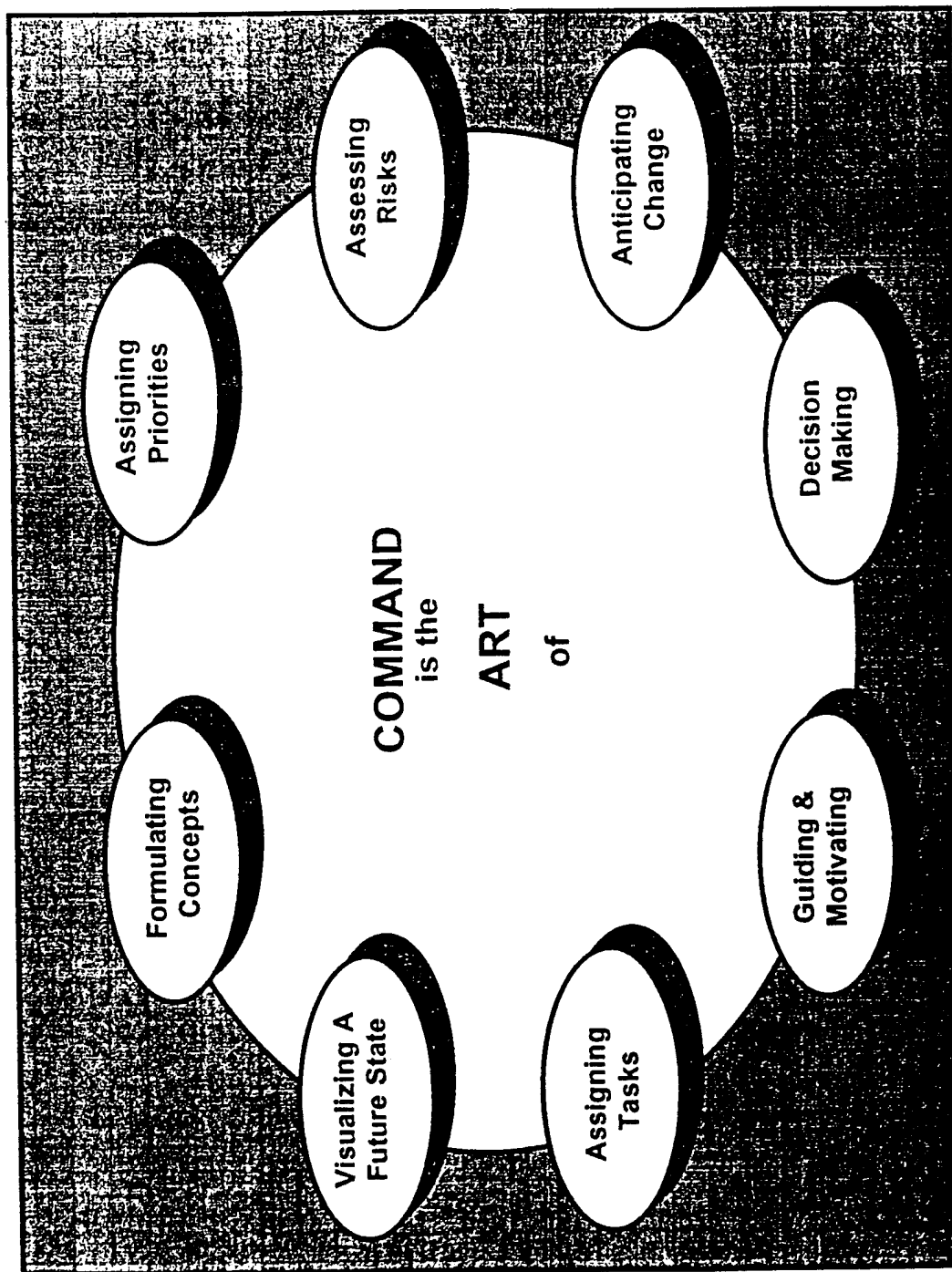
Army Command and Control Evaluation System Phases

1. ***Planning.*** The formulation of direction, the assessment of environments, the development of alternatives, the selection of an alternative, the coordination and exchange of information, and the preparation of directives.
2. ***Preparation and Rehearsal.*** The dissemination of intent, the assimilation of directives, the arrangement of assets and resources, the interaction and control of staffs, and the modification of plans.
3. ***Execution.*** The initiation of actions, the modification of plans, the reporting of results and status, the attainment of objectives, and the culmination of action.

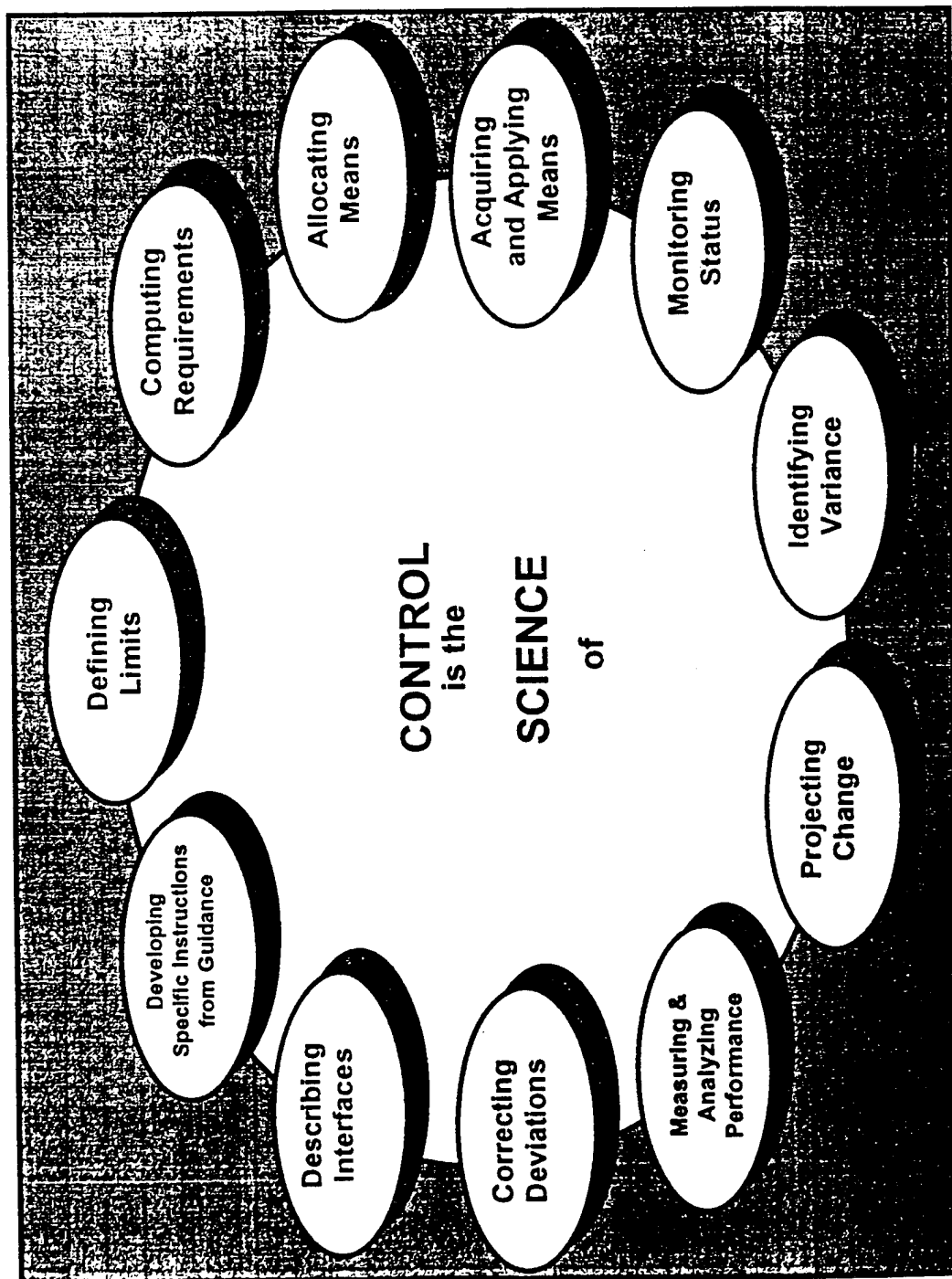
Army Command and Control Evaluation System



Army Command and Control Evaluation System



Army Command and Control Evaluation System



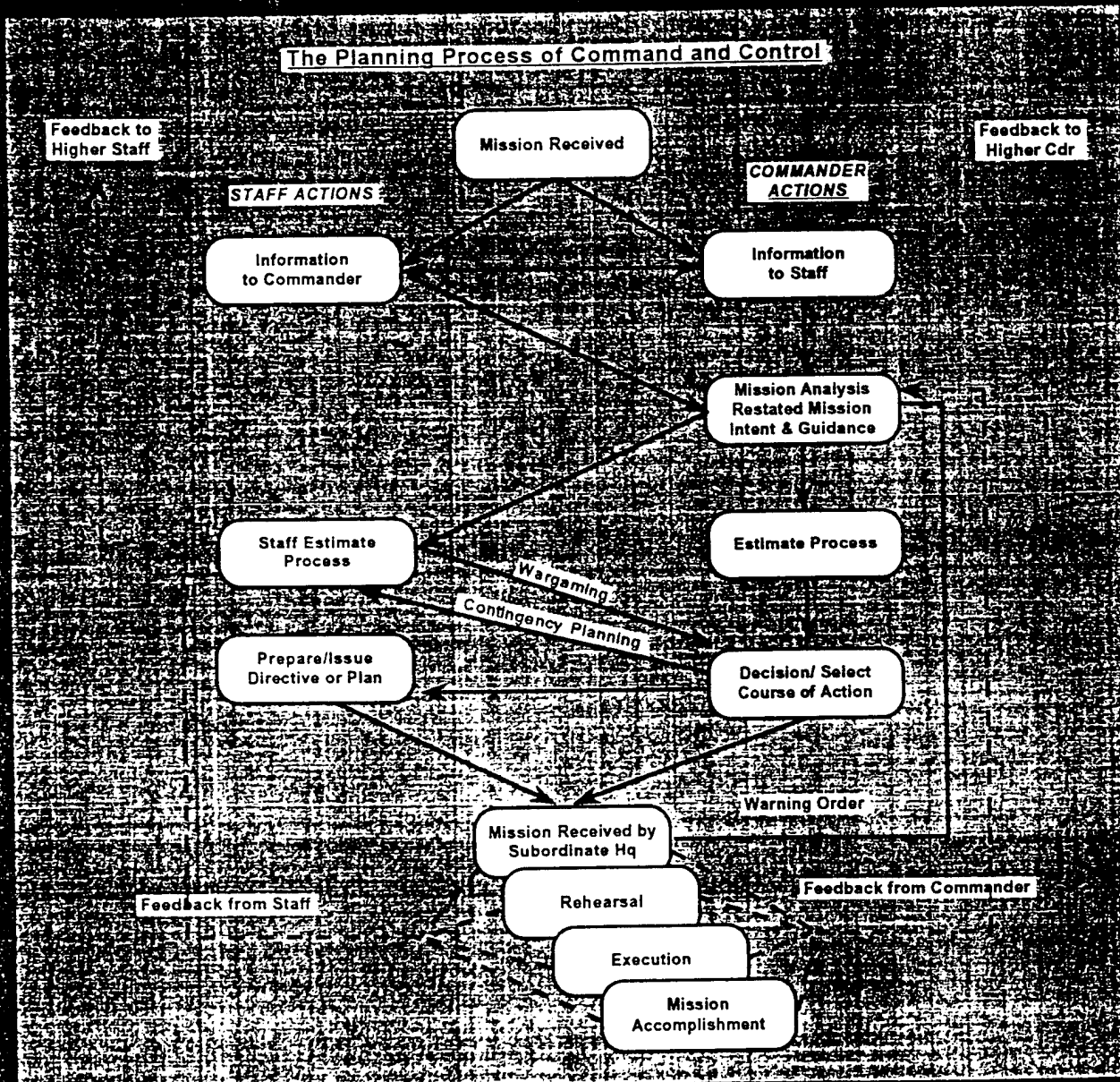
Army Command and Control Evaluation System

Process Measurements

Purpose of process measurement is to obtain reliable and valid data that describe the unit's:

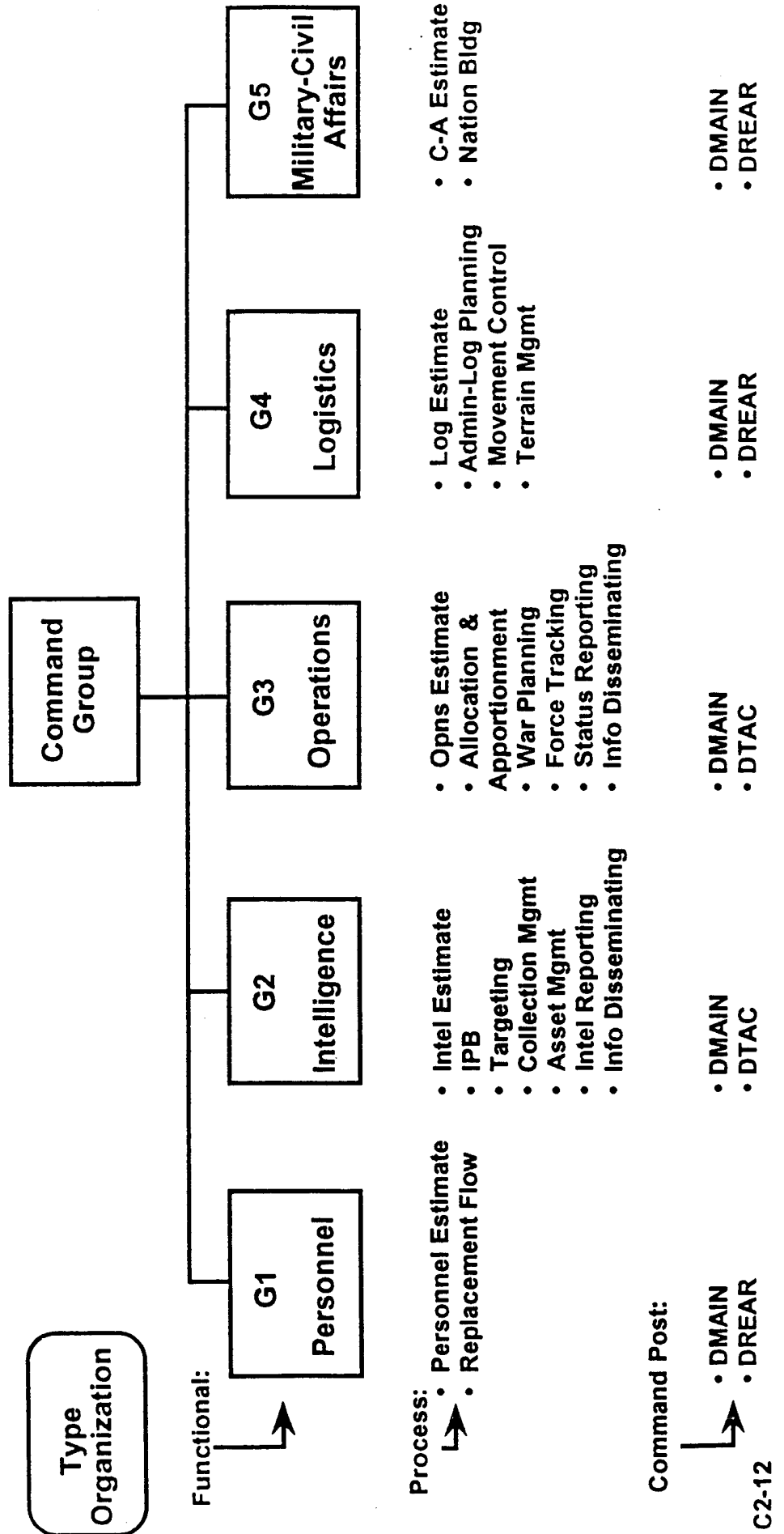
- understanding of the relationship among entities on the battlefield
- dissemination and maintenance of information holdings needed to produce a common perception of the battlefield
- ability to accommodate change based on perceptions

Army Command and Control Evaluation System



Army Command and Control Evaluation System

Staff Organization and Function



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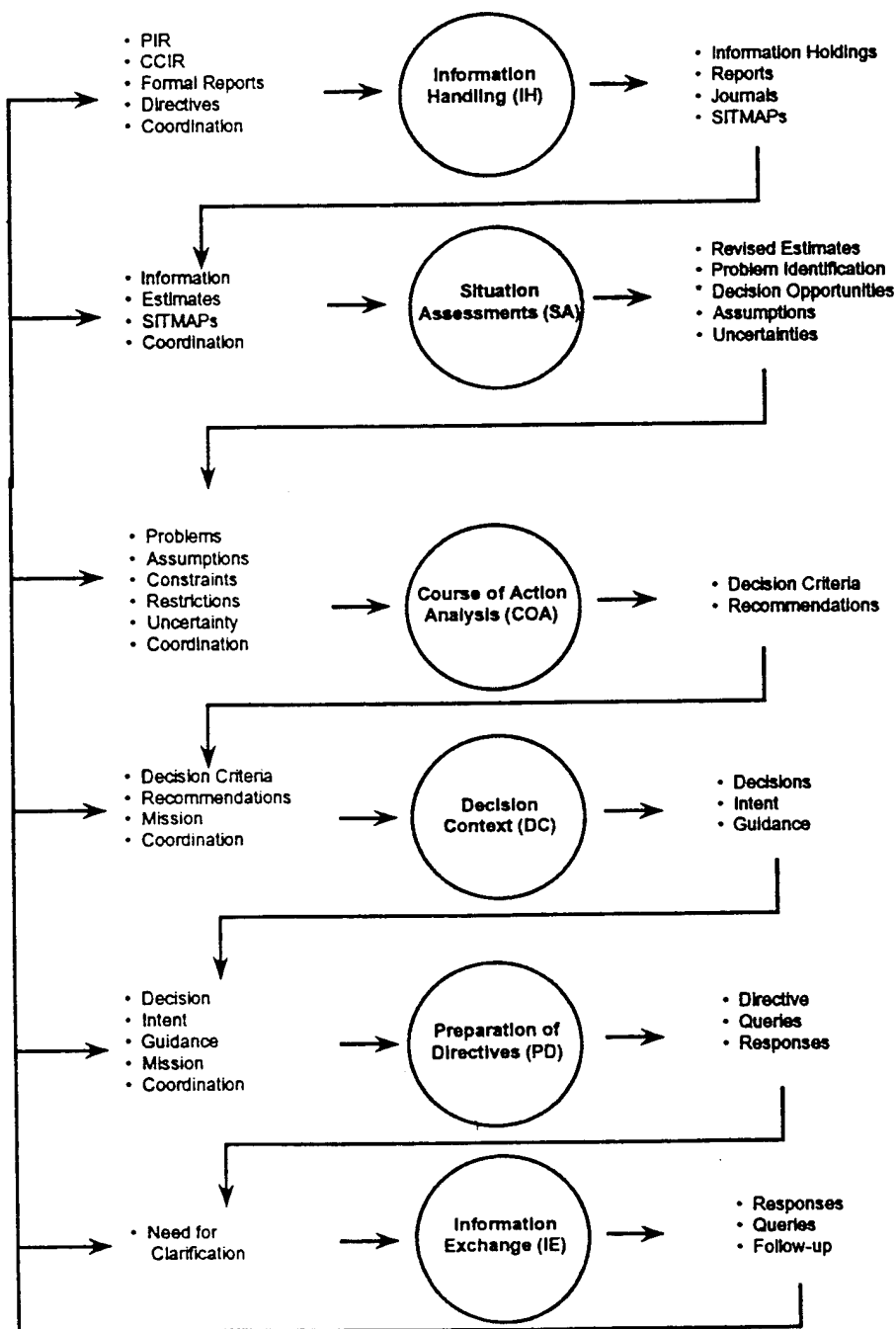
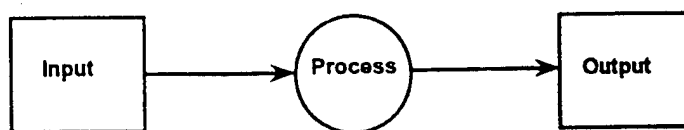
Army Command and Control Evaluation System

Assumptions about Process Measurement

- Open system architecture
- Doctrinally grounded behaviors
- Interdependent behaviors
- Linkages between processes
- Unobtrusive observation

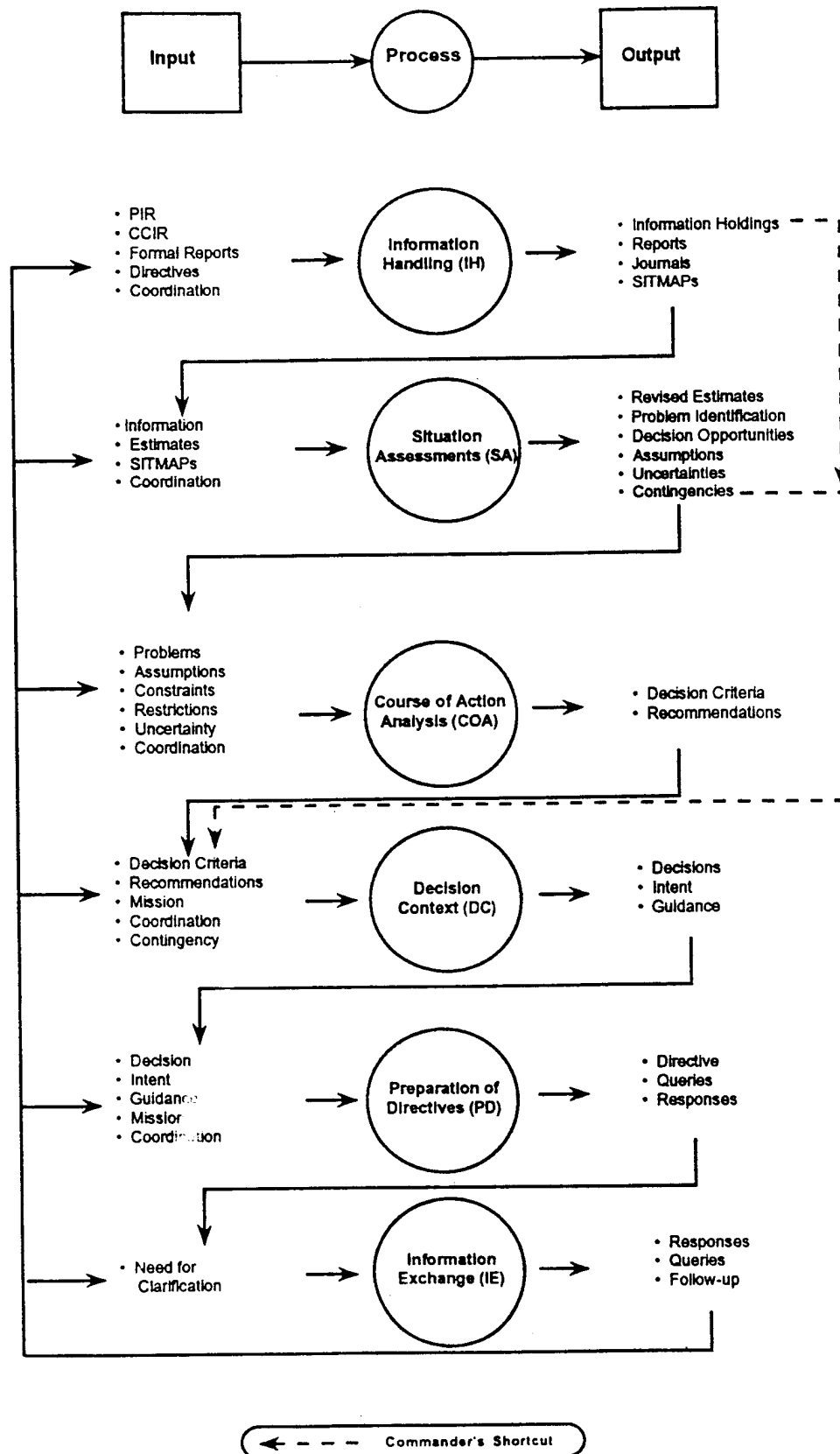
Army Command and Control Evaluation System

Systems Approach to C2



Army Command and Control Evaluation System

Systems Approach to C2 with Commander's Shortcuts



Army Command and Control Evaluation System

Summary and Conclusions

- C2 process involves complex collective behaviors, interdependencies.
- C2 process requirements change due to uncertainty, resource constraints, and timing.
- C2 process measurement requires recognition, recording, reducing and reporting of the collective behaviors and learning.
- ACCES provides the quantity and quality of data for detailed analysis if there are-
 1. proficient observers with knowledge of the methodology and the doctrine,
 2. valid observation tools and reliable observations, and
 3. teamwork throughout the application.

######

Army Command and Control Evaluation System

Command and Control
and
ACCES:
Overview and Perspective

What Is ACCES ?

Terminology

Analysis: The act of manipulating, comparing, and correlating data to derive conclusions.

Application: The procedure by which ACCES data is collected, reduced and analyzed during and subsequent to an exercise.

C2 Document: A written or computer-based product of a C2 event.

C2 Evaluation: The judgement, based on measures and data, of C2-process-quality.

C2 Performance: The overall C2 effectiveness of a headquarters.

Coding: The transfer of raw data onto data sheets.

Computation: The assignment of numbers to objects or events according to a set of rules; the transformation of reduced data into measures.

Data: The discrete elements extracted from document(s) or observed event(s) that are used to describe performance.

Terminology (Continued)

Data Collection: The act of recognizing the important data elements of an event or document and recording them by time and location.

Data Reduction: The act of transforming data from raw notes or coded forms into reduced data usable in computation.

Document: A written or computer-based product of a C2 event.

DTG: The Date-Time Group. A six-digit identifier of day (first two digits) and military time (last four digits), e.g. "120400".

Effectiveness: The ability of the unit to achieve the desired effect of an activity.

Environment: The physical and conceptual battlefield surroundings in which a CP operates.

Event: An observable occurrence that is discrete in terms of time and place.

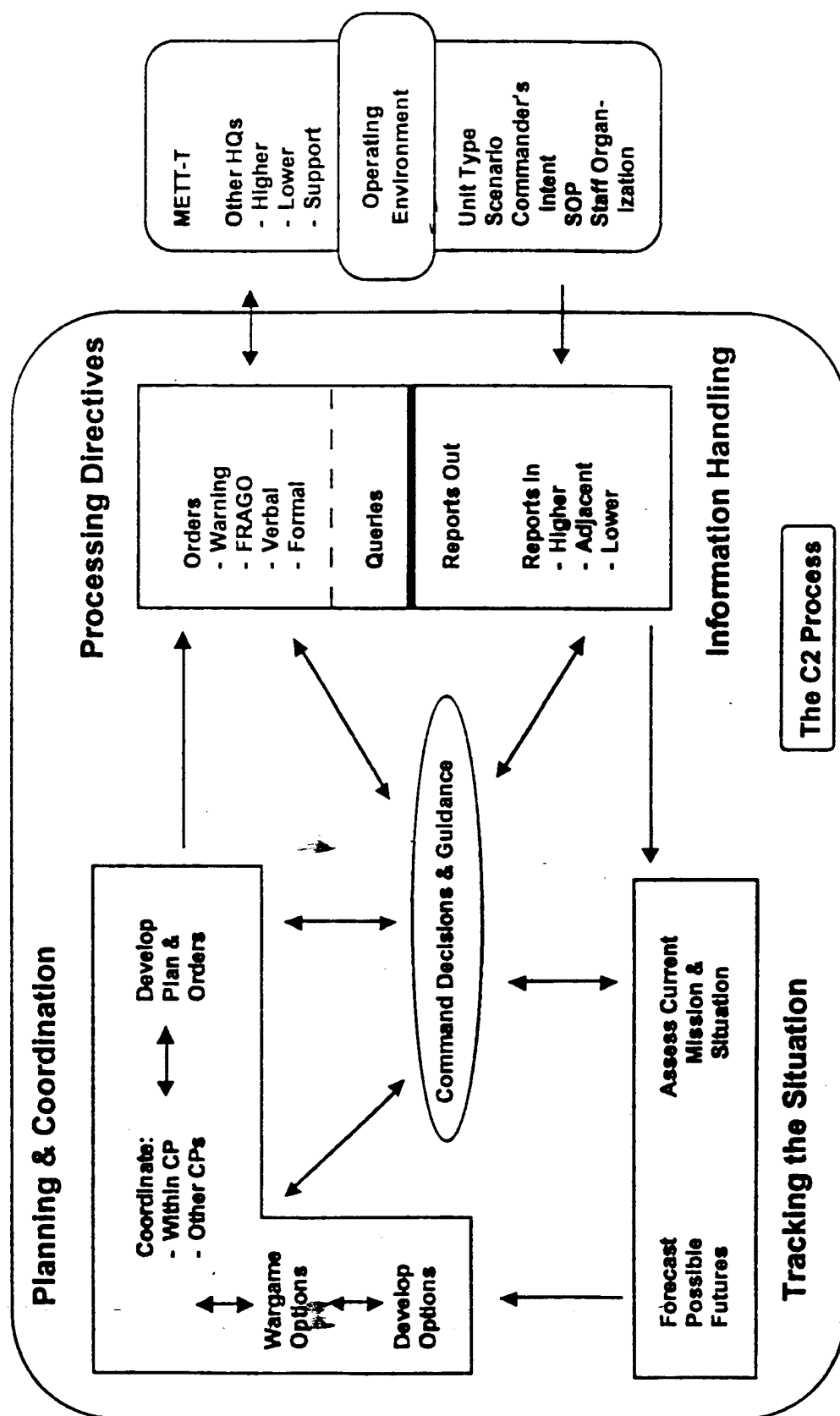
Plan: The means by which a headquarters structures its attempts to change or influence the battlefield environment.

Reliability: The consistency of the data collection process.

Quantitative: Summary of performance by the assignment of numerical values.

Qualitative: Summary of performance by the assignment of characteristics or attributes.

ACCES Command and Control Model



Goals

- **Provide Performance Measurement to the Unit.**
- **Identify "Cause-and-Effect" Relationships.**
- **Provide Systemic Feedback to the Army.**

Preparation

- **Review Exercise Objectives.**
- **Compile Data Collection Plan.**
- **Select Data Collectors.**
- **Brief Staffs.**
- **Publish Data Collection Plan.**

Collection & Reduction

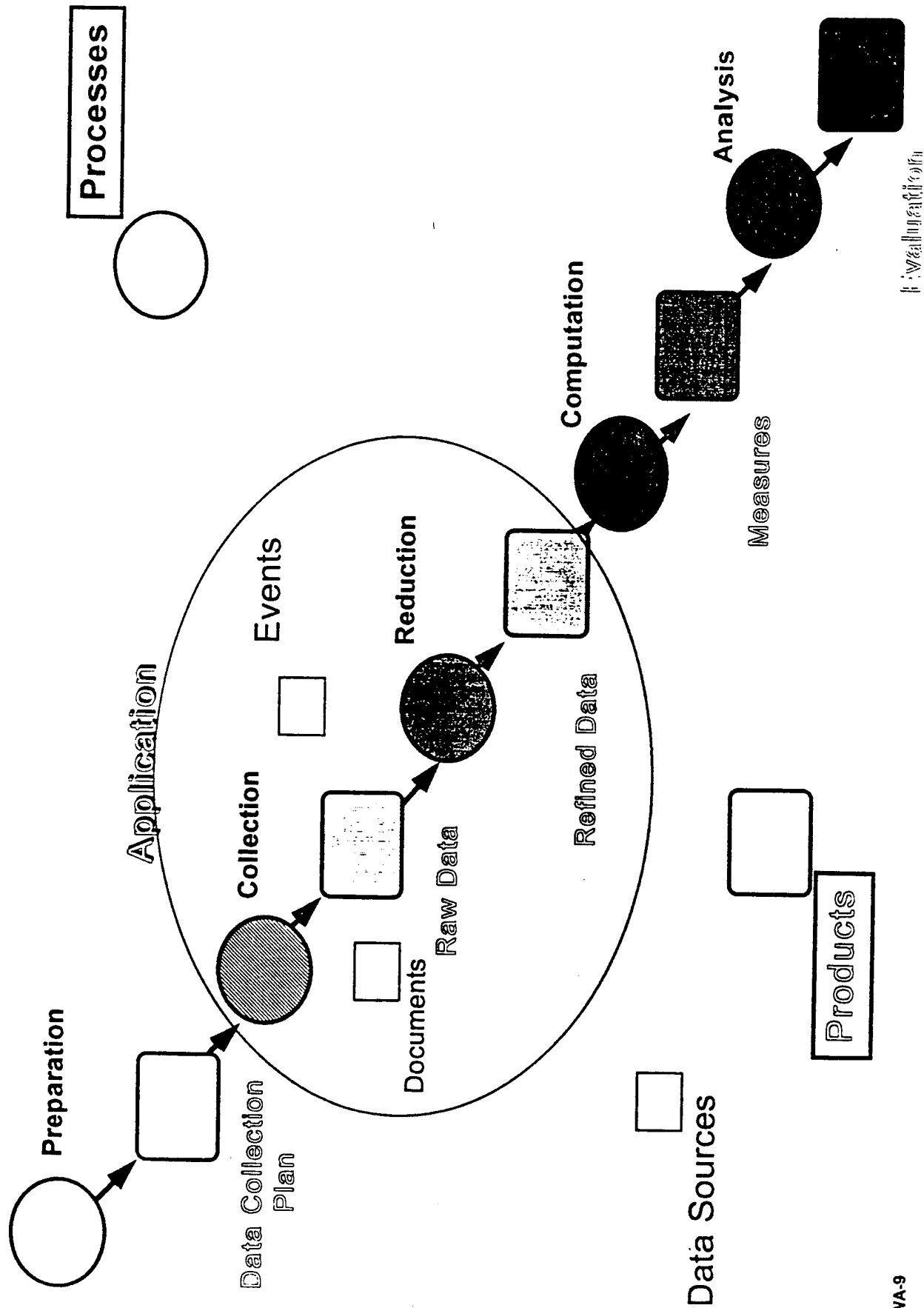
- **Data Collector Training.**
- **Data Collection During Exercise.**
- **Review and Consolidation of Data.**
- **Data Reduction.**

Analysis

Analysts Must:

- **Compute Scores,**
- **Develop Insights and Conclusions,**
- **Prepare Results.**

ACCES Data Flow



PREPARATION OF DIRECTIVES MEASURES (PD) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of directive: Warning Order ☐ FRAGO ☐ Other ☐ (Specify Type) _____

The order/directive changed or established:

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

The order/directive deals with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

DESCRIBE the context and content: _____

Which (if any) earlier decision and/or plan was this directive based on? _____

If not based on earlier decision and/or plan, who made the decision, and under what circumstances? _____

of staff members participating in directive preparation: _____ # of staff sections represented: _____

Time directive preparation started at this CP: _____

Time directive preparation stopped at this CP: _____

Total prep. time: _____

Time directive issued: _____

Time directive received by subordinate commands (separate times by commas): _____

Medium of transmission: FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

Did directive require clarification? Yes ☐ No ☐

From whom, and why? _____

Was directive event-driven? Yes ☐ No ☐ By what? _____

Time first element supposed to be initiated: _____

Time expected to be fully completed: _____

Total time span: _____

Other related data sheets: _____

Analyst Use Only

Time stimulus perceived at CP: _____

Was directive consistent with the decision? Yes ☐ No ☐

If not, which elements were inconsistent?

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

If issued by an alternate CP, does directive conflict with one from the primary CP? Yes ☐ No ☐

DECISION CONTEXT MEASURES (DC) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Stimulus for decision: _____

Time stimulus perceived at CP: _____

What was the decision? _____

What time was the decision made? _____

What officer made the decision?

Commander ☐

Assistant Division Commander ☐

Chief of Staff or Executive Officer ☐

G-1/S-1 ☐ G-2/S-2 ☐ G-3/S-3 ☐ G-4/S-4 ☐

Subordinate in commander's name ☐

Other _____ Unknown ☐

What unit(s) were affected? _____

What elements did the decision concern?

Mission ☐ Task Organization ☐ Schedule ☐ Boundaries ☐

Other _____ Unknown ☐

Identification of directive: _____

Type of operation (as per attached list): _____

Was a contingency activated? Yes ☐ No ☐

If Yes, title or other ID of the contingency: _____

Other related data sheets: _____

COURSE OF ACTION MEASURES (COA) ACCES 93:

Observer: _____ Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Staff:

Number of staff members involved in COA analysis: _____

Number of staff sections involved in COA analysis: _____

Courses Of Action:

COAs considered:
(Draw arrow by # of COA recommended)
(Circle # of COA selected)

	Prediction of Enemy Reaction	Number of Enemy Reactions	Likelihood of Mission Accomplishment	Residual Friendly Capacity at Completion	Residual Enemy Capacity at Completion	Time COA Completed	End of Period COA Covers
1. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
2. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
3. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
4. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
5. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
6. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
7. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
8. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Number of other COAs articulated
but not seriously considered: _____

Other Related Data Sheets: _____

SITUATION ASSESSMENT MEASURES (SA) ACCES 93:

Observer: _____

Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of situation assessment: Comprehensive ☐ Selective ☐

Briefly describe the assessment: _____

Time assessment expressed: _____ By whom? _____

Reason for assessment: _____

Assessment dealt with:

Friendly Force:

- ☐ Mission
- ☐ Task Organization
- ☐ Disposition
- ☐ Activity
- ☐ Status
- ☐ Support

Enemy Force:

- ☐ Composition
- ☐ Disposition
- ☐ Combat Power
- ☐ Activity
- ☐ Capabilities

This assessment covered the current and expected situation up to time: _____

This assessment contributed to a decision at time: _____

Were other futures considered possible? Yes ☐ No ☐ How Many?: _____

Other possibilities were: _____

Other related data sheets: _____

Analyst Use Only

Assessment was: Correct ☐ Incorrect ☐

INFORMATION EXCHANGE MEASURES (IE) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

This exchange represents: Coordination ☐ Information Seeking ☐

This exchange took place: Within a CP ☐ Between CPs ☐

Time that need for exchange was perceived: _____

Describe the issue or action: _____

This exchange dealt with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

Exchange requested by: _____

Request initiated by: Request sent to: Time initiated: Time response received: Exchange made via:

[Possible means of exchange include: FM, MSE/field 'phone, Fax, Courier, MCS, Face to face.]

Other Related Data Sheets _____

INFORMATION HANDLING MEASURES (IH) ACCES 93:

Observer: _____ Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Report Is: Incoming ☐ To: _____

Outgoing ☐ From: _____

SITREP ☐ INTSUM ☐

Operation Report ☐ Spot Report ☐

Warning Order/Directive ☐ Weather And Terrain Report ☐

Brief description of contents: _____

Time report is due (scheduled reports only): _____

Time report/warning order/directive is received (all incoming)/sent (all outgoing): _____

Time report/warning order/directive is perceived (all incoming): _____

Medium of transmission:

FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

If a report, mark all elements addressed:

Provide element details where available.

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

If a report is queried, mark all elements queried:

If report queried, by whom? _____

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

Source of data in report: _____

Other related data sheets _____

Summary

- **ACCES is a process measurement tool**
- **Division level headquarters performance**
- **Not mechanistic**
- **Quality feedback to training unit**

Preparation of Directives:

The PD Form

Preparation of Directives (PD)

Purpose and Methods

PURPOSE: To review the procedures needed to observe and report on the preparation of directives by:

discussing types of directives,
recognizing behaviors related to preparation of directives,
highlighting data elements needed to report
directive preparation,
reviewing common mistakes in data collection,
demonstrating the use of the PD Data Collection Form

Preparation of Directives (PD)

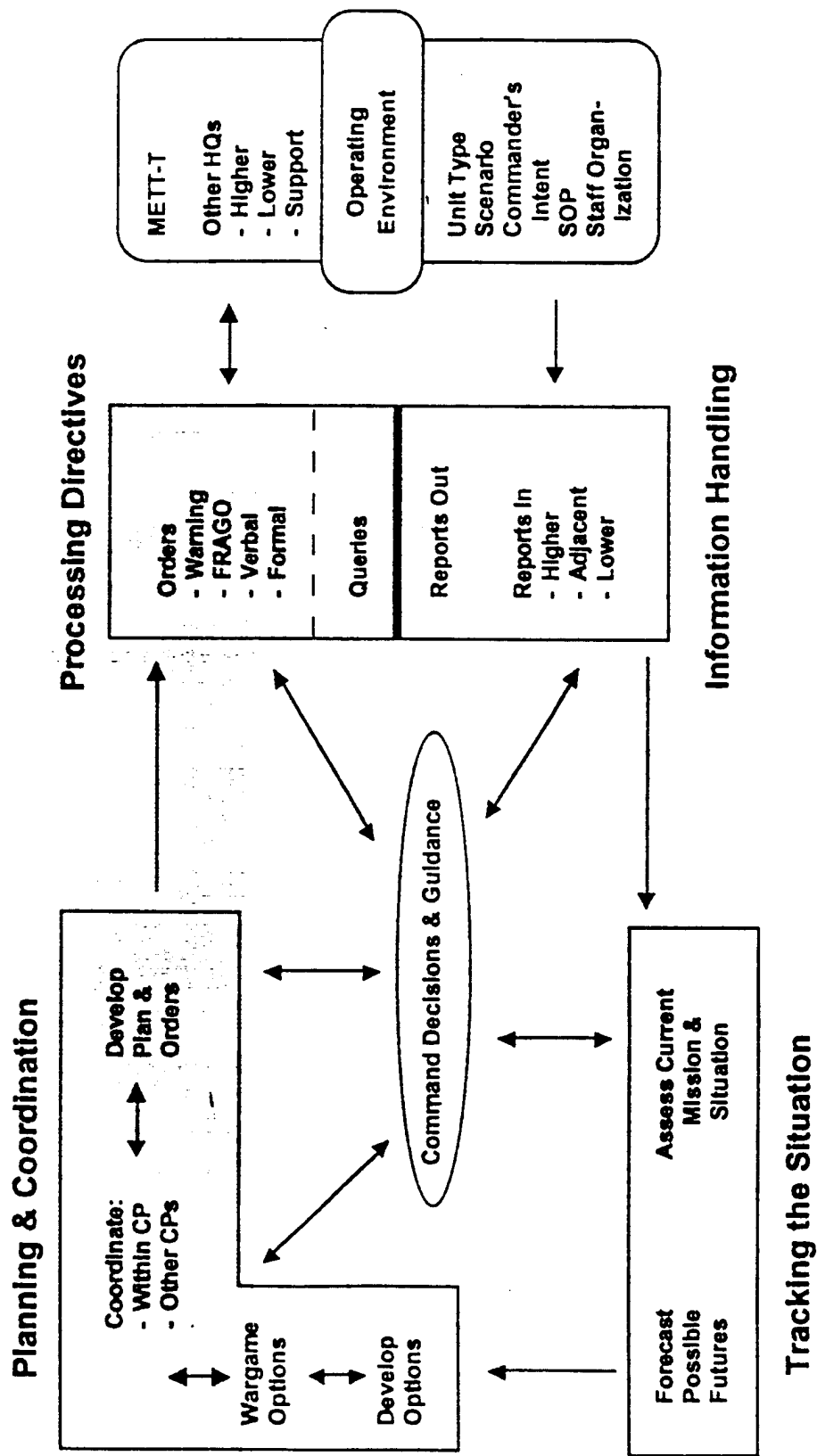
Observer Focus

What is a directive?

Data are needed by the analysts:

- **Who is involved in the process?**
- **What are the impacts on battlefield functions?**
- **What are the critical times?**

ACCES Command and Control Model



Preparation of Directives (PD)

Decision may change the plan in any of these areas -

- Mission(s)
- Task Organization
- Schedule(s)
- Boundaries

A directive may affect these functions -

- Personnel
- Intelligence
- Operations
- Logistics

Preparation of Directives (PD): Exploded Form

CP where DC made observation

DC's Name _____

Observer: _____

Date-time group: _____

Time when DC "opened" form _____

CP Section where DC made observation _____

Plan elements affected by the Directive _____

The type of activity the Directive concerns _____

Briefly summarize the important features of the Directive _____

If the Directive is based on a new plan/Decision, who originated it and why? _____

When was the staff told to prepare the Directive? _____

When was the Directive completed? _____

At what time did the CP begin issuing the Directive? _____

How was the Directive transmitted? (If by various media, mark times received by medium used.) _____

Was any part of the Directive queried? (This does NOT include requests for retransmission.) _____

If the Directive was queried, by whom, and why? _____

Did the Directive employ events as "triggers" rather than a time schedule? _____

When did a staff member with meaningful responsibility seriously observe this stimulus? _____

Did the terms and elements of the Directive correspond to the Commander's decision? _____

If not, in what elements did the Directive differ? _____

PREPARATION OF DIRECTIVES MEASURES (PD) ACCESS 93:

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

DTAC ☐ DMAIN ☐ DREAR ☐ BRIGADE _____

Type of directive: _____

The order/directive changed or established: _____

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

The order/directive deals with: _____

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

DESCRIBE the content and content: _____

Which (if any) earlier decision and/or plan was this directive based on? _____

If not based on earlier decision and/or plan, who made the decision, and under what circumstances? _____

of staff members participating in directive preparation: _____

of staff sections represented: _____

Time directive preparation started at this CP: _____

Time directive preparation stopped at this CP: _____

Time directive issued: _____

Time directive received by subordinate commands (separate times by comma): _____

Medium of transmission: FM ☐ MSE/field phone ☐ Fax ☐ Bnet ☐ Courier ☐ MCS ☐

Did directive require clarification? Yes ☐ No ☐

From whom, and why? _____

Was directive event-driven? Yes ☐ No ☐ By what? _____

Time first element supposed to be initiated: _____

Time expected to be fully completed: _____

Total time span: _____

Other related data sheets: _____

Analyst Use Only

Time stimulus perceived at CP: _____

Was directive consistent with the decision? Yes ☐ No ☐

If not, which elements were inconsistent? _____

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

If issued by an alternate CP, does directive conflict with one from the primary CP? Yes ☐ No ☐

List any data sheets from actions connected to this Directive Preparation (e.g., Situation Assessment, the Decision, exchanges to coordinate execution, etc.) _____

If the Directive was issued by an Alternate CP, does it contradict one from the Primary CP?

PD-6

Preparation of Directives (PD)

Types of Operations

Operations (from FM 100-5)

Offense: Movement to Contact
Hasty Attack
Deliberate Attack
Exploitation & Pursuit
Special Purpose Ops
(Reconnaissance in force, spoiling/counterattacks,
feints/demonstrations, offensive reliefs, raids.)

Defense: Area
Mobile
Security (Screening/Covering)
Reserve Ops
Rear Ops

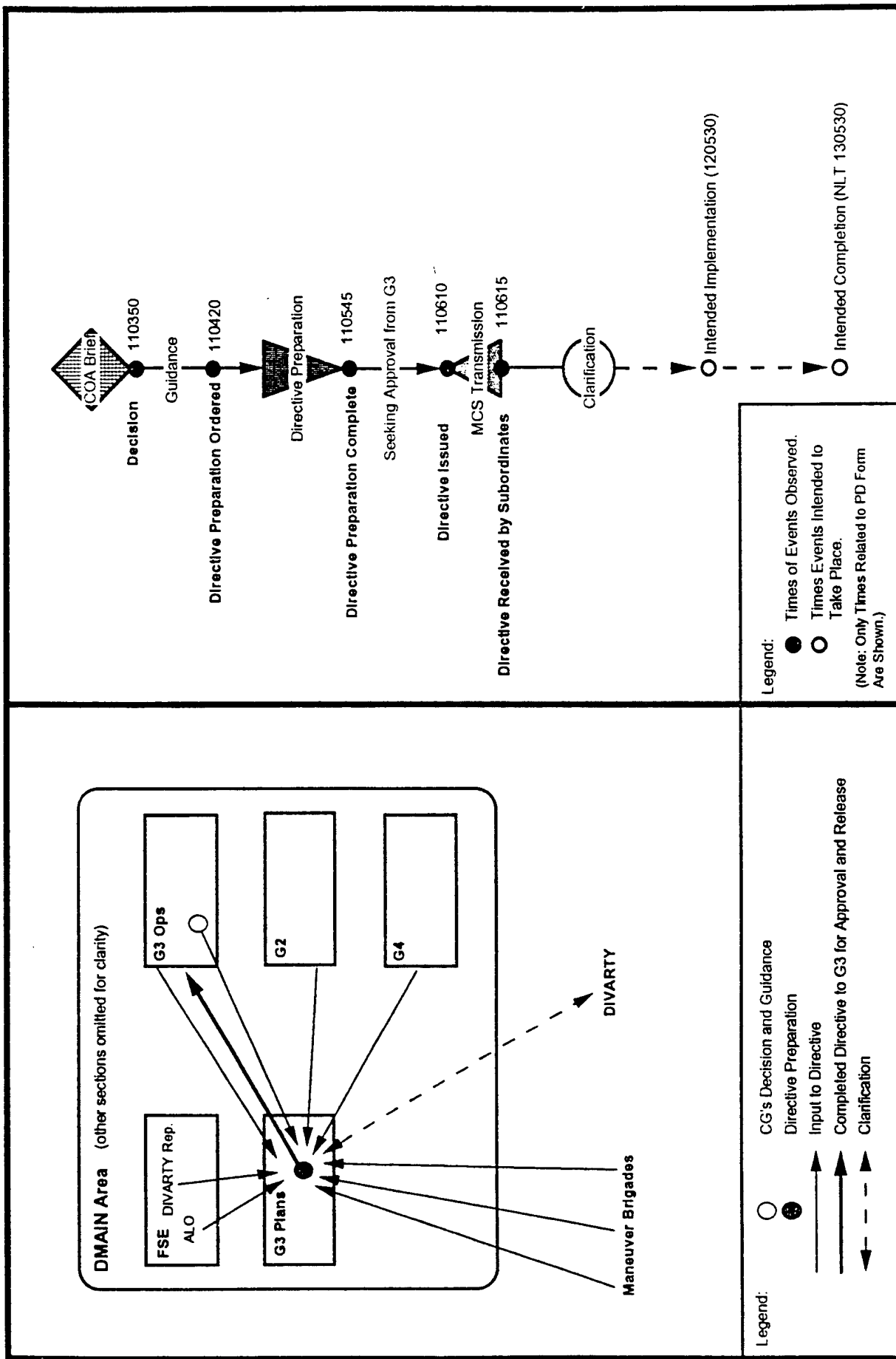
Retrograde

Support: Indirect Fire Support
Combat Support
Command and Control

Preparation of Directives

CP Schematic

Timeline



PREPARATION OF DIRECTIVES MEASURES (PD) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐

DMAIN ☐

DREAR ☐

Brigade _____

Current Ops ☐

Plans ☐

Command ☐

Intelligence ☐

CSS ☐

Fire Support ☐

Special Staff ☐

Type of directive: Warning Order ☐ FRAGO ☐ Other ☐ (Specify Type) _____

The order/directive changed or established:

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

The order/directive deals with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

DESCRIBE the context and content: _____

Which (if any) earlier decision and/or plan was this directive based on? _____

If not based on earlier decision and/or plan, who made the decision, and under what circumstances? _____

of staff members participating in directive preparation: _____ # of staff sections represented: _____

Time directive preparation started at this CP: _____

Time directive preparation stopped at this CP: _____

Total prep. time: _____

Time directive issued: _____

Time directive received by subordinate commands (separate times by commas): _____

Medium of transmission: FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

Did directive require clarification? Yes ☐ No ☐

From whom, and why? _____

Was directive event-driven? Yes ☐ No ☐ By what? _____

Time first element supposed to be initiated: _____

Time expected to be fully completed: _____

Total time span: _____

Other related data sheets: _____

Analyst Use Only

Time stimulus perceived at CP: _____

Was directive consistent with the decision? Yes ☐ No ☐

If not, which elements were inconsistent?

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

If issued by an alternate CP, does directive conflict with one from the primary CP? Yes ☐ No ☐

Preparation of Directives (PD)

Common Mistakes in Data Collection

- Not capturing information on verbal directives.
- Not fully identifying the written directive.
- Not measuring the level of participation in directive preparation.

Preparation of Directives (PD)

Summary

- Observation of directive preparation is complex:
 - long duration,
 - many participants,
 - many related forms.
- Records of times and counts of staff involved quantify the directive preparation process.
- Consistency between the directive and decision may be assessed during data reduction
- PD Forms may require inputs from other observers.

Decisions:

The DC Form

Decision Context (DC)

Purpose and Methods

PURPOSE: To review the procedures needed to observe and report on the decision making context by:

- discussing types of decisions,
- recognizing behaviors that indicate decision making,
- highlighting data elements needed to describe decision cycles,
- discussing common mistakes in using the Decision Context form,
- demonstrating the use of the Decision Context data collection form.

Decision Context (DC)

Observer Focus

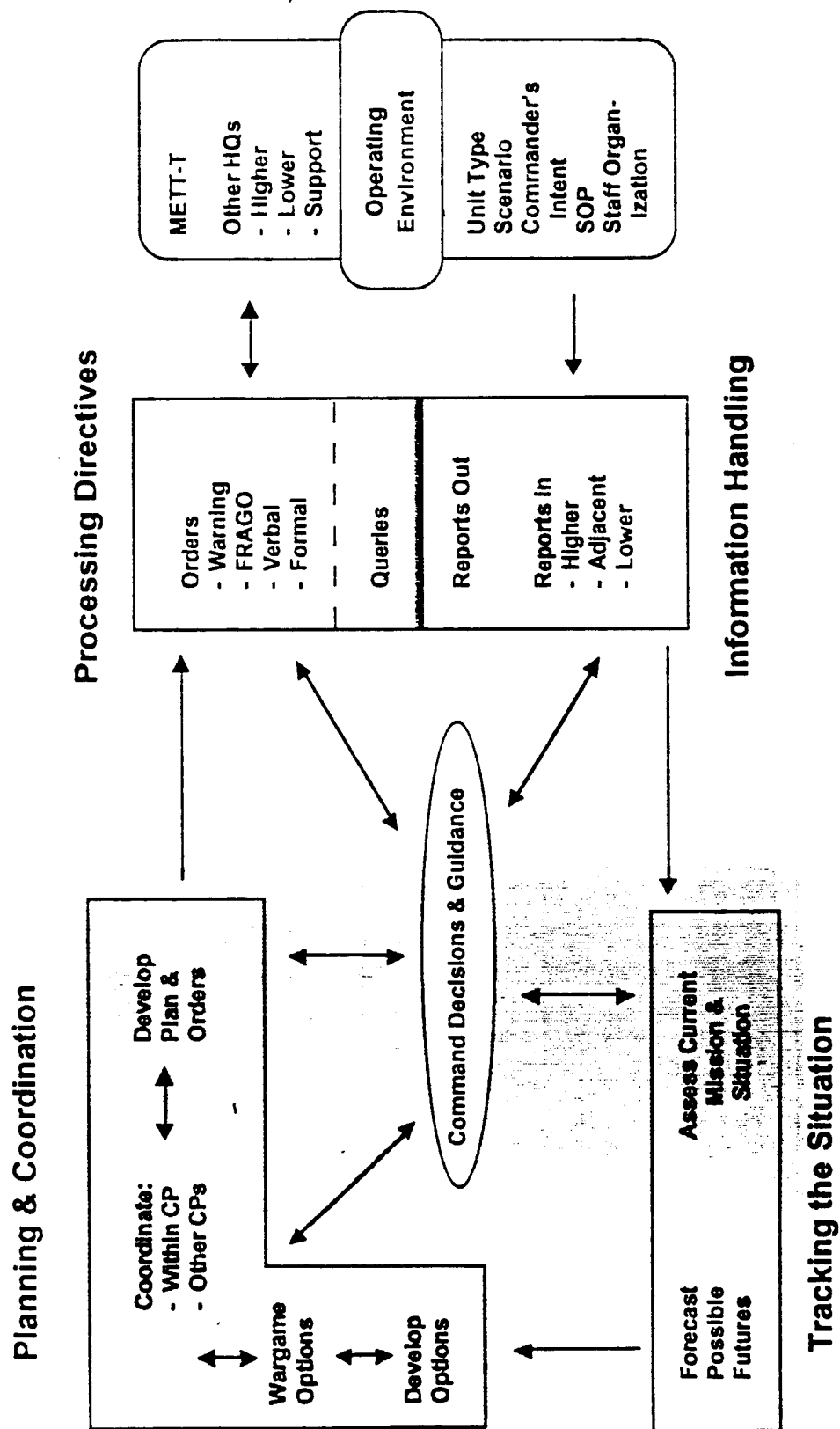
What is a decision?

Who are the decision makers?

Where is decision making likely to take place?

When are decisions likely to occur?

ACCES Command and Control Model



Decision Context (DC)

Decision Elements

Elements normally affected by decisions:

- mission(s)
- task organization
- schedule(s)
- boundaries

Decisions: Exploded Form

DC's Name _____ CP where DC made observation _____ Time when DC "opened" the form _____

What event led to the decision being made? _____ CP section where DC made observation _____

When did a staff member with meaningful responsibility seriously observe the stimulus? _____ Briefly describe the decision _____

Select one to indicate the decision maker _____ When did the decision maker make the decision? _____

What plan elements were affected by the decision? _____ List units involved _____

Indicate the type of operation decided upon _____ Show the name, designation, number, or DTG of the directive implementing the decision _____

Did the decision activate one of a set of preplanned options? _____

If so, give the name/designation/# of the option selected _____

List any data sheets from actions connected to this decision (e.g., a directive prepared to implement it, etc.) _____

Observer: _____

DECISION CONTEXT MEASURES (DC) ACCES 92.3

Date time-group _____

DTAC ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ File Support ☐ Special Staff ☐

Current Ops ☐ DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Stimulus for decision: _____

Time stimulus perceived at CP: _____

What was the decision? _____

What time was the decision made? _____

What officer made the decision? _____

Commander ☐ Assistant Division Commander ☐ Chief of Staff or Executive Officer ☐ G-1/S-1 ☐ G-2/S-2 ☐ G-3/S-3 ☐ G-4/S-4 ☐ Subordinate in commander's name ☐ Other _____ Unknown ☐

What unit(s) were affected? _____

What elements did the decision concern? _____

Mission ☐ Task Organization ☐ Schedule ☐ Boundaries ☐ Other _____ Unknown ☐

Identification of directive: _____

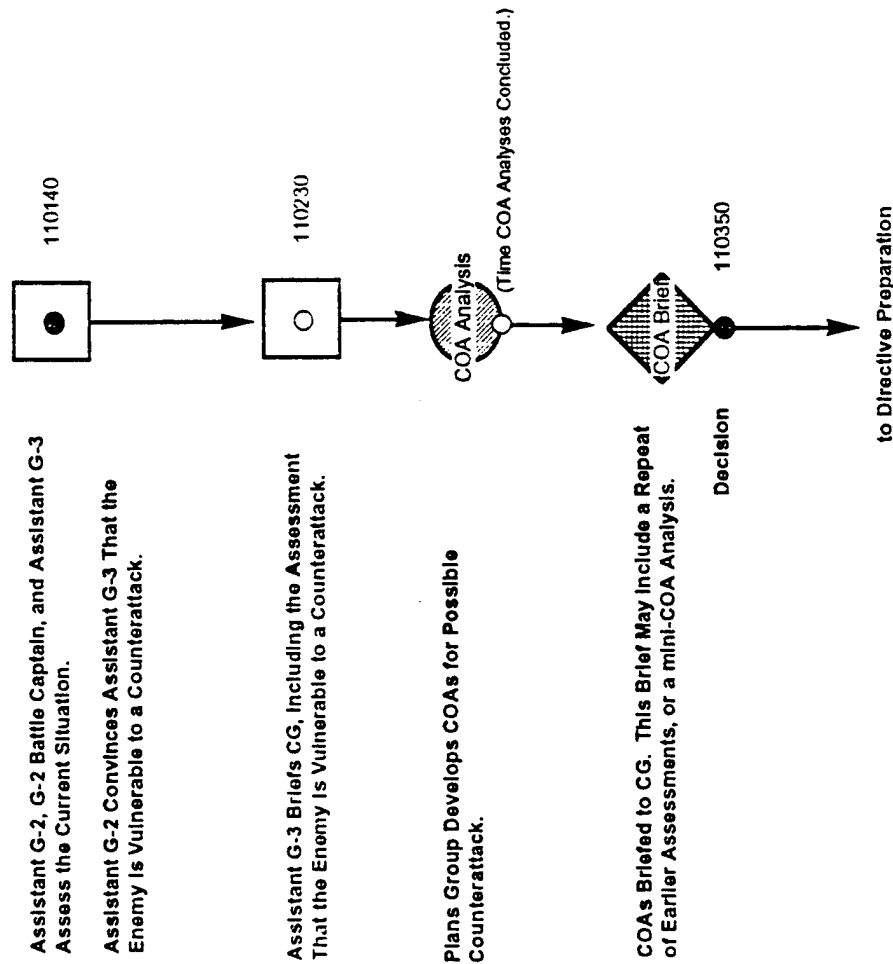
Type of operation (as per attached list): _____

Was a contingency activated? Yes ☐ No ☐

If Yes, title or other ID of the contingency: _____

Other related data sheets: _____

Decisions Timeline



Legend: ● Times of Events Observed to be Coded on the DC Form. ○ Times of Other Events of Relevance to the Decision.

DECISION CONTEXT MEASURES (DC) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Stimulus for decision: _____

Time stimulus perceived at CP: _____

What was the decision? _____

What time was the decision made? _____

What officer made the decision?

Commander ☐

Assistant Division Commander ☐

Chief of Staff or Executive Officer ☐

G-1/S-1 ☐ G-2/S-2 ☐ G-3/S-3 ☐ G-4/S-4 ☐

Subordinate in commander's name ☐

Other _____ Unknown ☐

What unit(s) were affected? _____

What elements did the decision concern?

Mission ☐ Task Organization ☐ Schedule ☐ Boundaries ☐

Other _____ Unknown ☐

Identification of directive: _____

Type of operation (as per attached list): _____

Was a contingency activated? Yes ☐ No ☐

If Yes, title or other ID of the contingency: _____

Other related data sheets: _____

Decision Context (DC)

Common Mistakes in Data Collection

- Inability to identify whether a contingency had been activated.
- Describing an action rather than a decision.
- Not identifying the related data sheets.

Decision Context (DC)

Summary

Observation of decisions allows us to define decision cycles.

Decisions are recognizable and recordable events.

Decisions will produce many related data collection forms.

Course of Action(COA) Analysis:

The COA Form

Course of Action (COA)

Purpose and Methods

PURPOSE: To review the procedures needed to observe and report on course of action (COA) analysis by:

discussing COA development,
recognizing behaviors related to COA analysis and selection,
highlighting data elements needed to report on COA analysis,
reviewing common errors in COA data collection,
demonstrating the use of the Course of Action form.

Course of Action (COA)

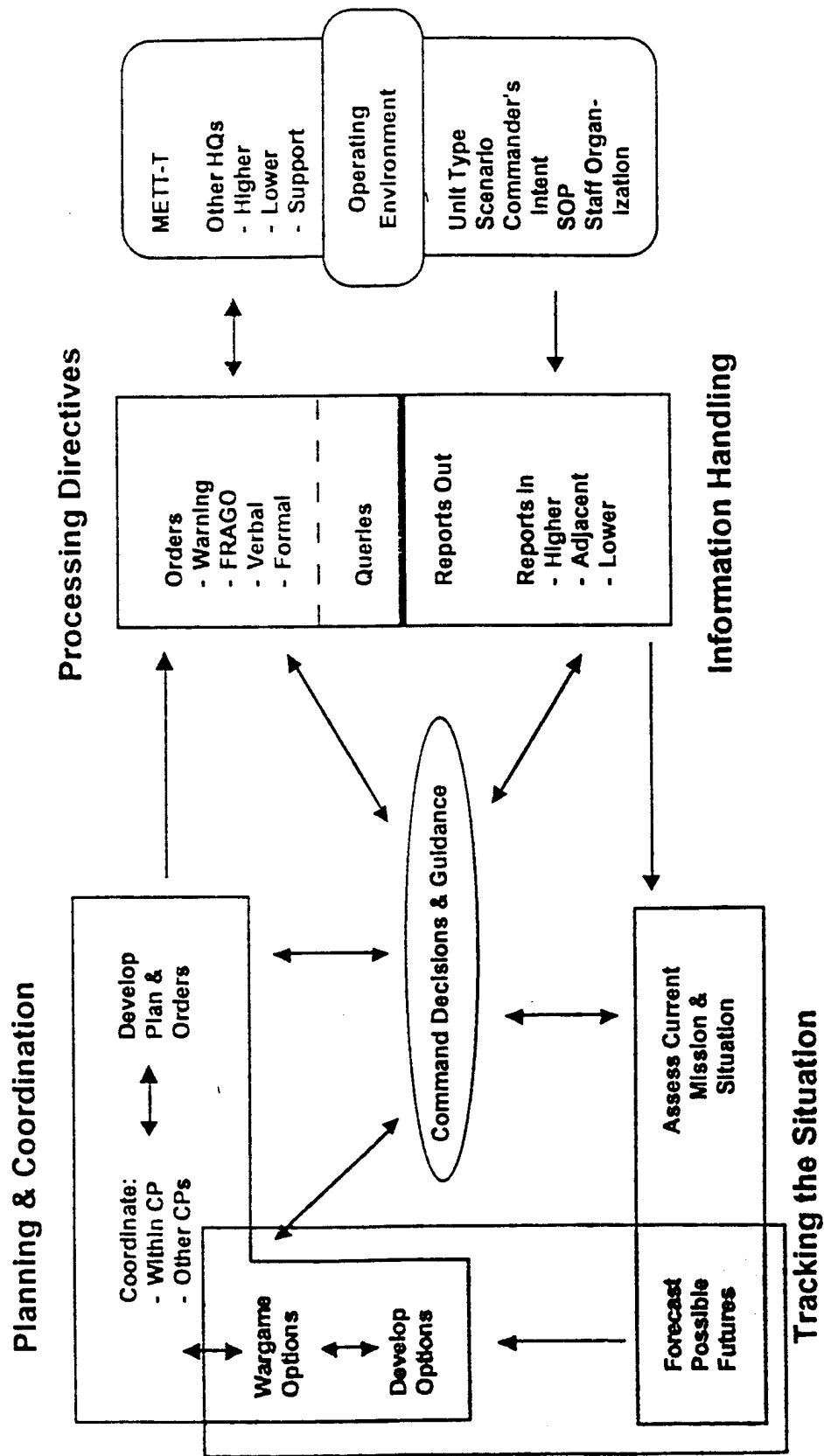
Observer Focus

What is a COA?

How are COAs generated and analyzed?

When and where are COAs likely to be "visible"?

ACCES Command and Control Model



Course of Action (COA)

COA Evaluation Areas

Elements of a Course of Action which are evaluated:

- enemy reactions to COA (type and number),
- likelihood of mission accomplishment,
- residual friendly capacity once the COA is implemented,
- residual enemy capacity once the COA is implemented,
- how far the COA "looks into the future",
- staff participation in COA analysis.

Course of Action: Exploded Form

DC's Name _____

CP where DC made observation _____

Time when DC "opened" the form _____

CP section where DC made observation _____

Observer: _____

COURSE OF ACTION MEASURES (COA) ACCES 92.3:

DTAC ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐ Brigade

Current Ops ☐ DTAC ☐ DMAIN ☐ DREAR ☐ Brigade

Staff:

Number of staff members involved in COA analysis: _____

Number of staff sections involved in COA analysis: _____

Courses of Action:

COAs considered: (Draw arrow by # of COA recommended) (Circle # of COA selected)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Up until what point (Time or Event) was the COA intended to be valid?

At what time did the staff cease examination of this COA?

Did the staff explicitly discuss what the remaining friendly and enemy capacities would be once the COA had been carried out?

Did the staff explicitly discuss whether the COA would accomplish the Mission?

How many (if any) reactions were discussed?

Did the staff explicitly discuss enemy reaction(s)?

List those COAs that the staff examines carefully, not those not accorded study. Mark the COA recommended and circle the COA selected, if it is one of these.

How many staff members actively participated in the formulation of COAs?

Which staff sections actively participated in developing the COAs?

Number of other COAs articulated but not seriously considered: _____

Other Related Data Sheets: _____

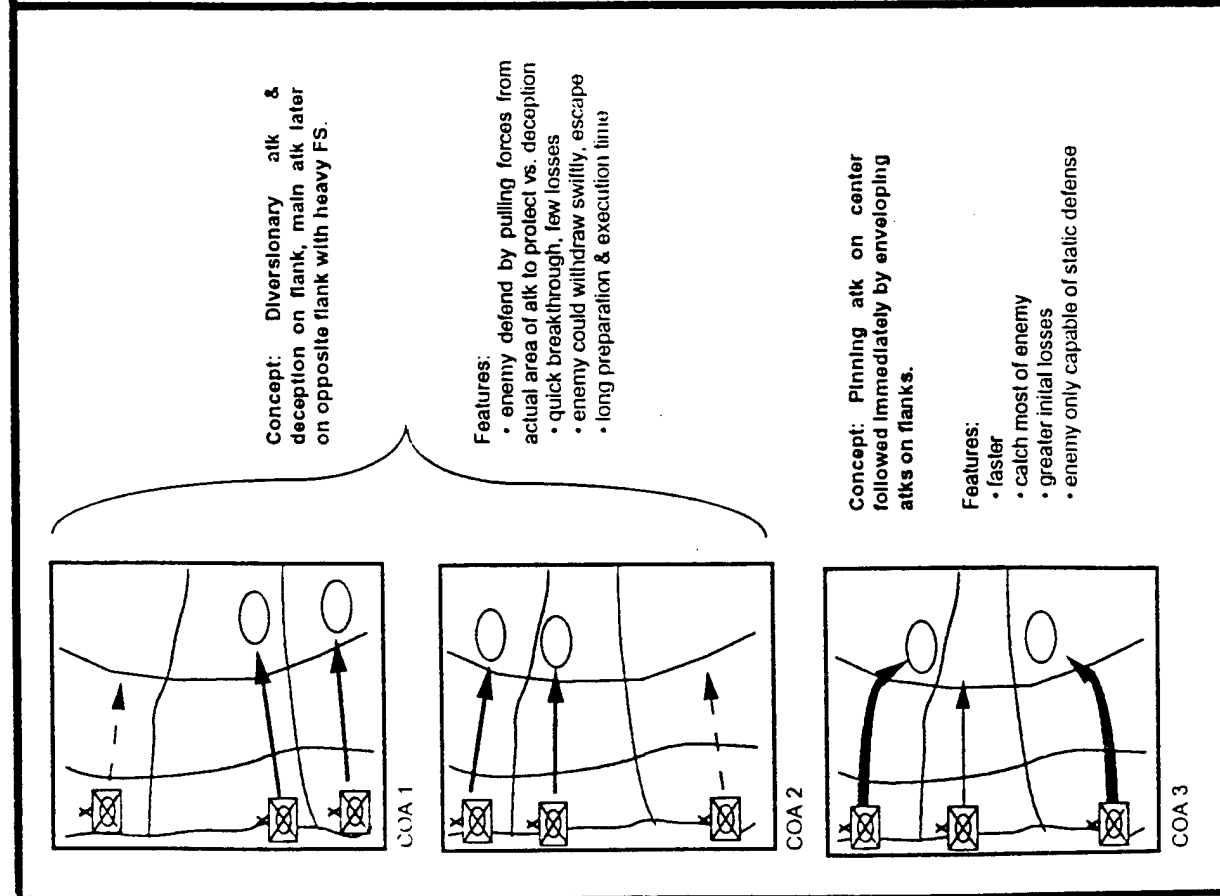
List any data sheets from actions connected to this report (e.g., an assessment made after reading it, etc.)

COAs that were brought up, reviewed, & dismissed without careful examination, or COAs not accorded careful study

Course of Action

Illustrations

Timeline



Legend:

- Times of Events Observed to be Coded on the COA Form.
- Times of Other Events of Relevance to the Decision

COURSE OF ACTION MEASURES (COA) ACCES 93:

Observer: _____ Date-time-group _____
 DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Staff:

Number of staff members involved in COA analysis: _____

Number of staff sections involved in COA analysis: _____

Courses Of Action:

COAs considered:
 (Draw arrow by # of COA recommended)
 (Circle # of COA selected)

	Prediction of Enemy Reaction	Number of Enemy Reactions	Likelihood of Mission Accomplishment	Residual Friendly Capacity at Completion	Residual Enemy Capacity at Completion	Time COA Completed	End of Period COA Covers
1. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
2. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
3. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
4. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
5. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
6. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
7. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
8. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Number of other COAs articulated
 but not seriously considered: _____

Other Related Data Sheets: _____

Course of Action (COA)

Common Mistakes in Data Collection

- Not identifying the selected COA.
- Not monitoring the staff estimate process.
- Not noting the elements of COA considered.
- Inaccurately counting number of participants involved in the COA development process.
- Not initiating a new COA form when the commander creates new COAs during a discussion briefing.

Course of Action (COA)

Summary

COAs represent distinct solutions to a problem.

COAs are prepared in response to guidance and intent.

COAs reflect changes in battlefield conditions which require action.

COA analysis produces a decision.

Situation Assessment:

The SA Form

Situation Assessment (SA)

Purpose and Methods

PURPOSE: To review the procedures needed to observe and report on the unit's ability to formulate selective and comprehensive assessments of friendly and enemy situations by:

- identifying areas of situation assessment to be addressed,
- highlighting data elements needed to report assessments,
- discussing common collection problems,
- demonstrating the use of the SA Data Collection Form.

Situation Assessment (SA)

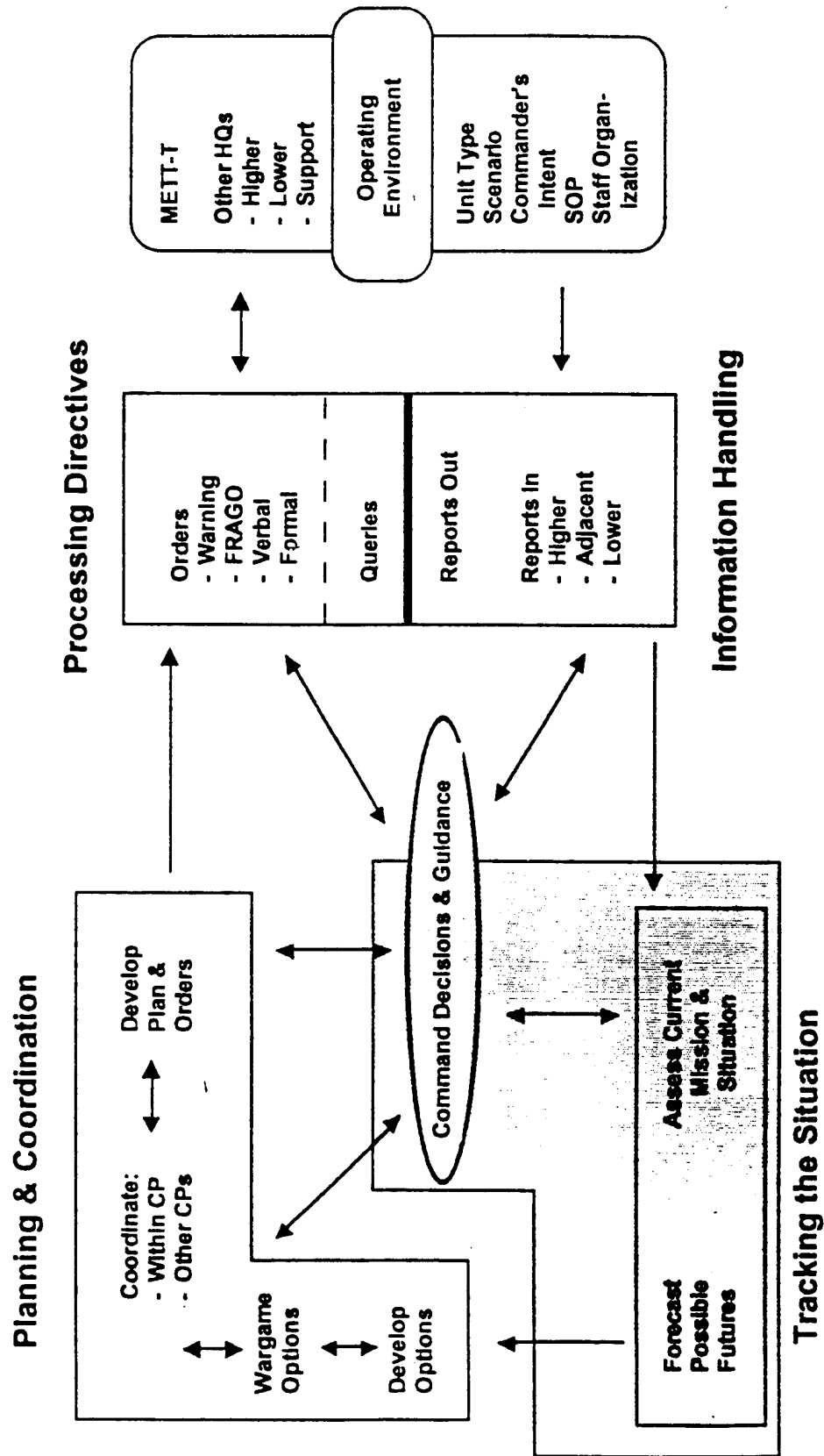
Observer Focus

What are selective and comprehensive Situation Assessments (SAs)?

What are the elements of a friendly SA?

What are the elements of an enemy SA?

ACCES Command and Control Model



Situation Assessment (SA)

- ***A Comprehensive Situation Assessment***

is a presentation or briefing at which one would expect a complete description of the situation to be presented.

Examples: Shift Handover

Decision Briefing

Update for the Commander

- ***A Selective Situation Assessment*** is a presentation or briefing at which one would not expect a complete description of the situation to be presented.

Examples: Discussion at SITMAP involving junior members of the staff.

Situation Assessment (SA)

Friendly Situation Assessment

Elements of a formal friendly situation assessment:

- mission (what is to be accomplished?)
- task organization (what forces and C2?)
- disposition (where?)
- activities (what is being done currently?)
- status (what condition are units in?)
- support (what FS, logistics?)

Situation Assessment (SA)

Enemy Situation Assessment

Elements of a formal enemy situation assessment:

- **composition (order of battle)**
- **disposition (location)**
- **combat power (strength)**
- **activities (current actions)**
- **capabilities (possible courses of action)**

Situation Assessment (SA): Exploded Form

DC's Name _____

CP where DC made observation _____

Time when DC "opened" the form _____

Summarize The Salient Features Of The Assessment.

When was the assessment expressed?

Why was the assessment made? (e.g., new information received, scheduled briefing, etc.)

Mark each area touched on or covered by the assessment. If an assessment addressed an element, no matter how cursorily, it is credited for dealing with that element.

If the assessment leads to a decision, at what time did the decision take place?

List any data sheets from actions connected to this assessment (e.g., a decision made after hearing it)

CP where DC made observation

SITUATION ASSESSMENT MEASURES (SA) ACCESS 92.3:

Observer: _____ Date-time-group: _____

DTAC ☐ DMAM ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of situation assessment: Comprehensive ☐ Selective ☐

Briefly describe the assessment: _____

Time assessment expressed: _____ By whom? _____

Reason for assessment: _____

Assessment dealt with:

Friendly Force: ☐ Mission ☐ Task Organization ☐ Disposition ☐ Activity ☐ Status ☐ Support ☐

Enemy Force: ☐ Composition ☐ Disposition ☐ Combat Power ☐ Activity ☐ Capabilities ☐

This assessment covered the current and expected situation up to time: _____

This assessment contributed to a decision at time: _____

Were other futures considered possible? Yes ☐ No ☐ How Many? _____

Other possibilities were: _____

Other related data sheets: _____

Analyst Use Only

Assessment was Correct ☐ Incorrect ☐

Analyst's judgment of assessment accuracy in light of ground truth.

Who (rank/position/role) delivered the assessment?

How far into the future was the assessment intended to be valid?

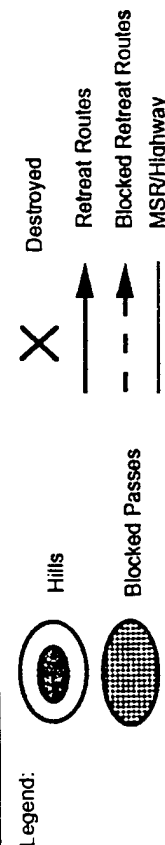
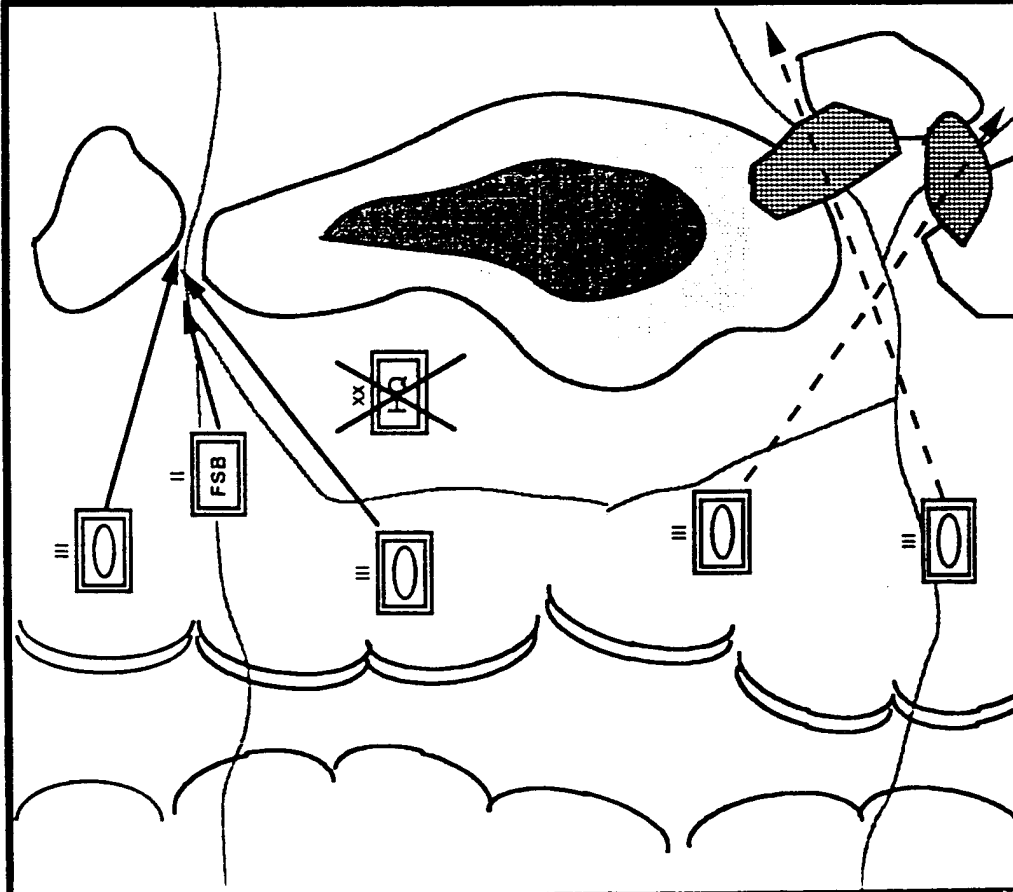
Did the assessment foresee more than one possible future (course of events)?

If so, how many?

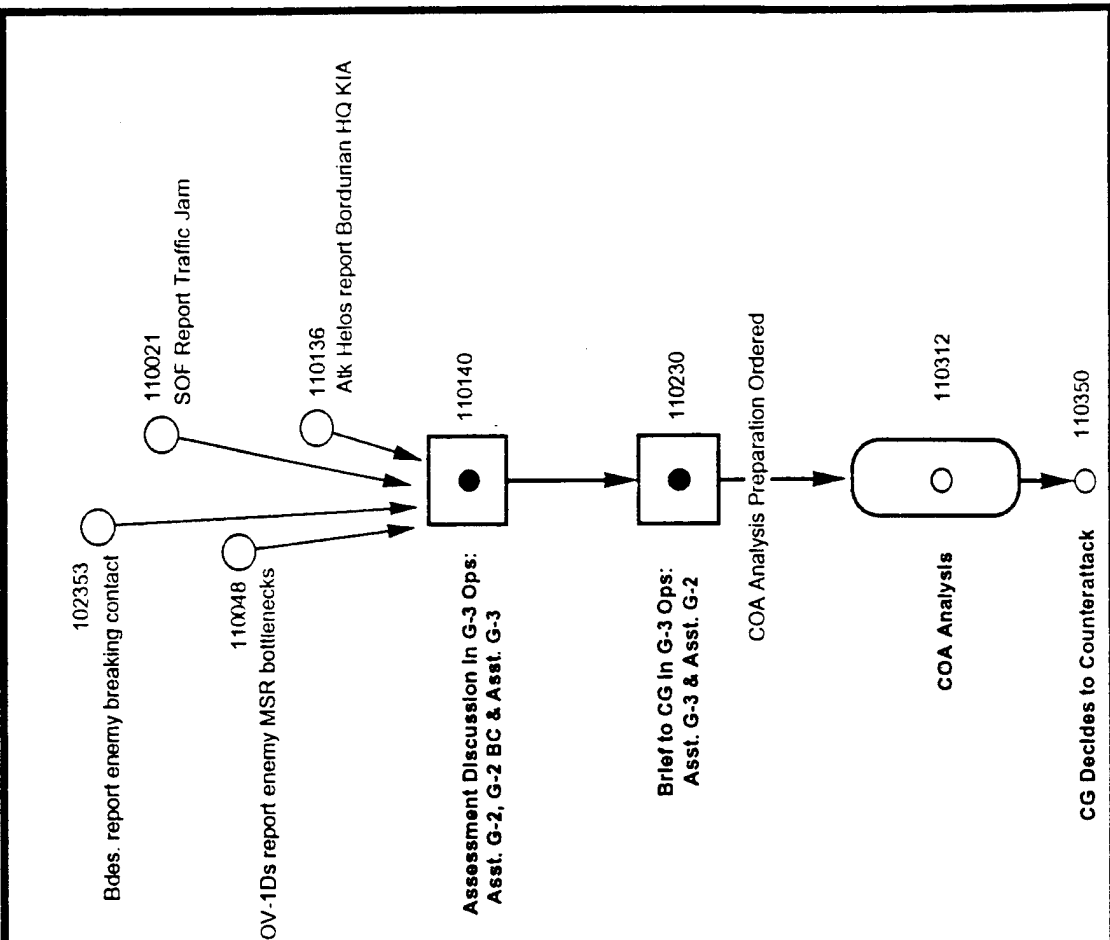
The other courses of events foreseen should be listed here

Situation Assessment

Illustration



Timeline



SITUATION ASSESSMENT MEASURES (SA) ACCES 93:

Observer: _____

Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of situation assessment: Comprehensive ☐ Selective ☐

Briefly describe the assessment: _____

Time assessment expressed: _____ By whom? _____

Reason for assessment: _____

Assessment dealt with:

Friendly Force:

- ☐ Mission
- ☐ Task Organization
- ☐ Disposition
- ☐ Activity
- ☐ Status
- ☐ Support

Enemy Force:

- ☐ Composition
- ☐ Disposition
- ☐ Combat Power
- ☐ Activity
- ☐ Capabilities

This assessment covered the current and expected situation up to time: _____

This assessment contributed to a decision at time: _____

Were other futures considered possible? Yes ☐ No ☐ How Many?: _____

Other possibilities were: _____

Other related data sheets: _____

Analyst Use Only

Assessment was: Correct ☐ Incorrect ☐

Situation Assessment (SA)

Common Mistakes in Data Collection

- Inability to distinguish comprehensive vs. selective SA.
- Inadequate description of the assessment.
- Failure to note alternative assessments when presented.

Situation Assessment (SA)

Summary

A-194

Situation Assessments may be comprehensive or selective.
Comprehensive Situation Assessments should include all elements.
Alternative situation assessments may exist and should be recorded.

Information Exchange:

The IE Form

Information Exchange (IE)

Purpose and Methods

PURPOSE: To review the procedures needed to observe and report on information exchange within and between CPs by:

describing information exchange behaviors,

highlighting data elements needed to record information exchange,

demonstrating the use of the Information Exchange (IE) Form,

practicing the use of the IE Form.

Information Exchange (IE)

Observer Focus

How to recognize information exchange.

How to discriminate between types of information exchange.

How to code information exchange behavior.

Information Exchange (IE)

Information Exchange Activities

Battlefield Action Coordinations:

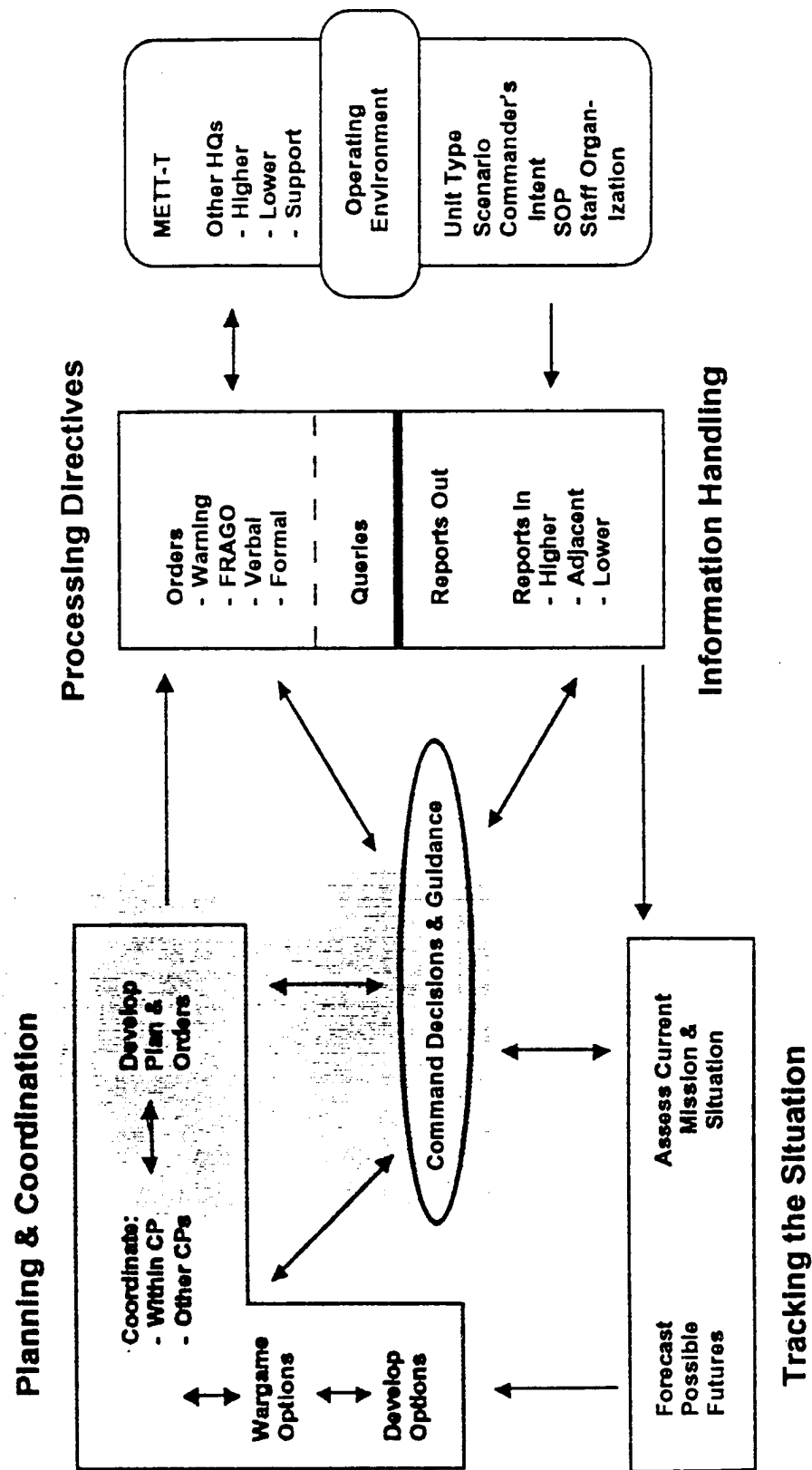
- focus on synchronizing battlefield activities
- are the fine tuning of directive implementation.

Information Seeking:

- the active solicitation of information in order to update the CP's picture of the battlefield or otherwise inform decision makers in ways that do not directly relate to battlefield activity.
- the "pulling" of information into the CP versus the "pushing" of scheduled and unscheduled reports, or queries to clarify reports.

Information Exchange (IE)

ACCES Command and Control Model



Information Exchange: Exploded Form

CP where DC made observation

Time when DC "opened" form

DC's Name

What type of exchange took place?

When did the CP staff realize an exchange was necessary?

To which of these topics did the exchange relate?

Who directed that the exchange take place? (Not always the person who picked up the phone.)

Who started the segment of the exchange on this line? (Section/CP/Officer)

To whom (Section/CP/Officer) was the segment of the exchange on this line directed?

When did the initiator begin this segment of the exchange?

INFORMATION EXCHANGE MEASURES (IE) ACCES 92.3:

Observer: _____ Date _____ Time-group _____

DTAC ☐ DMAIN ☐ REAR ☐ Brigade ☐

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

This exchange represents: Coordination ☐ Information Seeking ☐

This exchange took place: Within a CP ☐ Between CPs ☐

Time that need for exchange was perceived: _____

Describe the issue or action: _____

This exchange dealt with: _____

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

Exchange requested by: _____

Request initiated by: _____ Request sent to: _____ Time initiated: _____ Time response received: _____ Exchange resolved via: _____

CP section where DC made observation

Did the exchange involve only sections of one CP communicating with each other, or did it involve two or more CPs?

Briefly describe the origin and nature of the exchange. Do not simply note who spoke; include why!

When did this segment of the exchange end? In a fully resolved exchange, the last of these times will be the time resolved.

By what communication means was the exchange conducted? See list below.

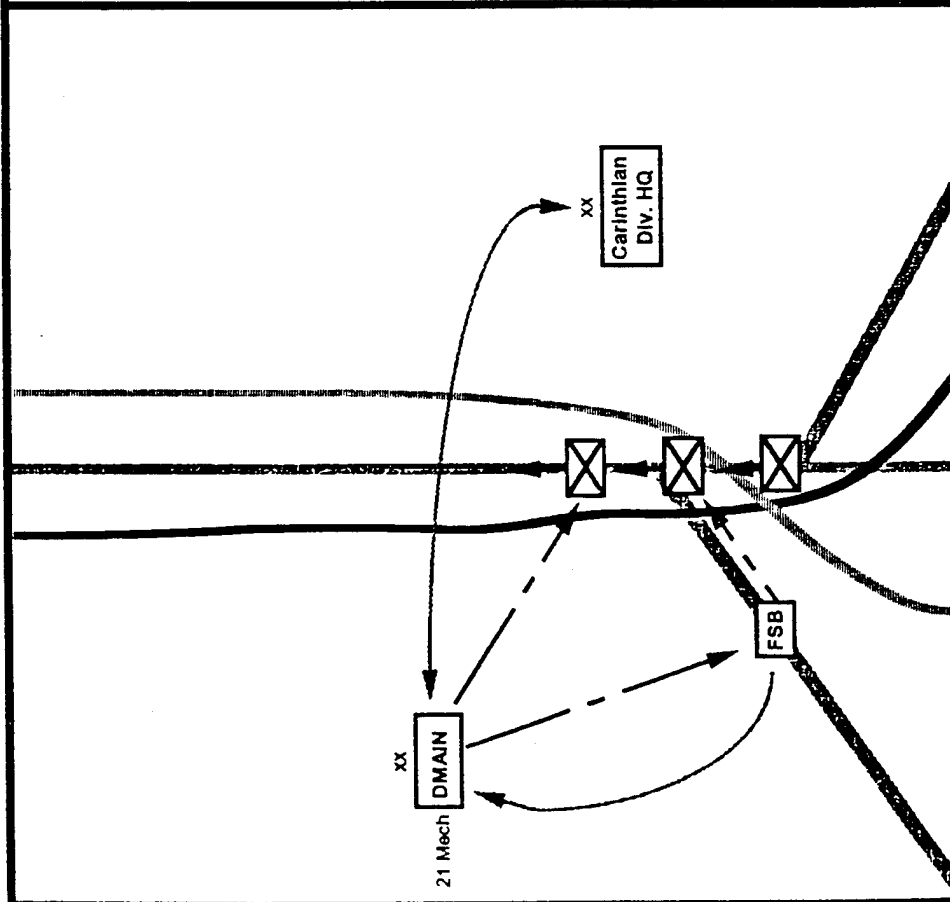
(Possible means of exchange include: FM, MSE/field phone, Fax, Courier, MCS, Face to face.)

Other Related Data Sheets _____

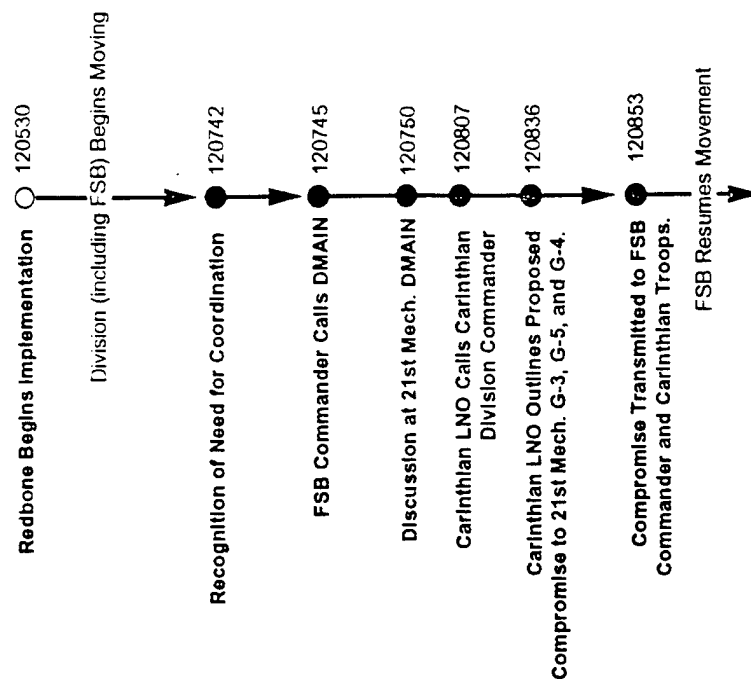
List any data sheets from actions connected to this exchange (e.g. a directive that required coordination).

Information Exchange

Illustration



Timeline



Legend:

- Times of Coordination Events.
- Other Related Times.

INFORMATION EXCHANGE MEASURES (IE) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

This exchange represents: Coordination ☐ Information Seeking ☐

This exchange took place: Within a CP ☐ Between CPs ☐

Time that need for exchange was perceived: _____

Describe the issue or action: _____

This exchange dealt with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

Exchange requested by: _____

Request initiated by: Request sent to: Time initiated: Time response received: Exchange made via:

[Possible means of exchange include: FM, MSE/field 'phone, Fax, Courier, MCS, Face to face.]

Other Related Data-Sheets _____

Information Exchange (IE)

Common Mistakes in Data Collection

- Confusing information handling with information exchange.
- Confusing information seeking with battlefield action coordination.
- "Describing" the participants instead of the information exchange action.
- Not listing related data sheets.

Information Exchange (IE)

Summary

Observations of information exchange record the "who, what, and when" of an event.

Information exchange involves at least two participants, often more.

Battlefield action coordination is intended to result in battlefield action: information seeking is just an active pulling in of information.

Information seeking is often a precursor to a decision; battlefield action coordination helps implement one smoothly.

Information Handling:

The IH Form

Information Handling (IH)

Purpose and Methods

PURPOSE: To review the procedures needed to observe and report on the flow and handling of information within the command post by:

discussing the unit's reporting cycle,
highlighting data elements needed to code the incoming
and outgoing reports,
demonstrating the use of the Information
Handling data collection forms.

Information Handling (IH)

Observer Focus

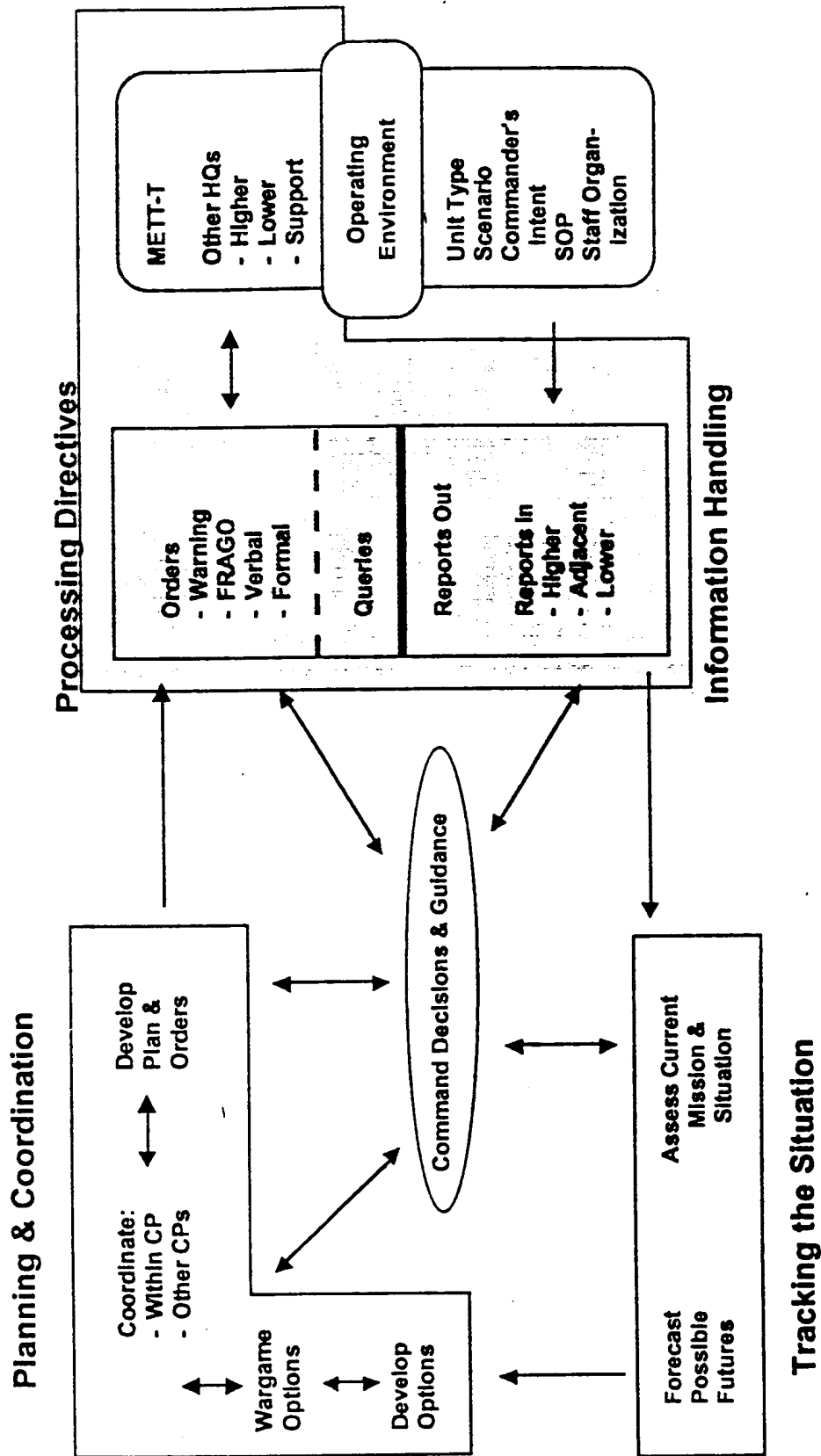
Understanding the information flow in the CP.

Discriminating among reports.

Capturing report detail: (transcription of verbal reports, identification of written reports.)

Following up on report queries.

ACCES Command and Control Model



Information Handling (IH)

Information Flow

Information handling measures the flow of information within and between C2 nodes.

Scheduled reports (INTSUMs & SITREPs) are assessed for lateness and breadth.

All reports assessed for accuracy.

Queries tracked by type of information queried.

Directives and Warning Orders tracked to determine lead time.

Information Handling: Exploded Form

CP where DC made observation

INFORMATION HANDLING MEASURES (IH) ACCESS 92.3:	
Observer: _____	Date-time-group: _____
DTAC <input type="checkbox"/> DMAIN <input type="checkbox"/> BREAR <input type="checkbox"/> BRIGADE <input type="checkbox"/>	
Current Ops <input type="checkbox"/> Plans <input type="checkbox"/> Command <input type="checkbox"/> Intelligence <input type="checkbox"/> CSS <input type="checkbox"/> Fire Support <input type="checkbox"/> Special Staff <input type="checkbox"/>	
Report is: Incoming <input type="checkbox"/> Outgoing <input type="checkbox"/>	To: _____ From: _____
SITREP <input type="checkbox"/> Operation Report <input type="checkbox"/> Warming Order/Directive <input type="checkbox"/> Weather And Terrain Req <input type="checkbox"/>	INTSUM <input type="checkbox"/> Spot Report <input type="checkbox"/>
Brief description of contents: _____	
Time report is due (scheduled reports only): _____	
Time report/warning order/directive is received (all incoming)/sent (all outgoing): _____	
Time report/warning order/directive is perceived (all incoming): _____	
Medium of transmission: _____	
FM <input type="checkbox"/> MSE/field phone <input type="checkbox"/> Fax <input type="checkbox"/> Brief <input type="checkbox"/> Courier <input type="checkbox"/> MCS <input type="checkbox"/>	
If a report, mark all elements addressed: _____	If a report is queried, mark all elements queried: _____
Provide element details where available: _____	If report queried, by whom? _____
Unit ID <input type="checkbox"/> _____	Unit ID <input type="checkbox"/> _____
Unit location <input type="checkbox"/> _____	Unit location <input type="checkbox"/> _____
Capability <input type="checkbox"/> _____	Capability <input type="checkbox"/> _____
Combat activity <input type="checkbox"/> _____	Combat activity <input type="checkbox"/> _____
Source of data in report: _____	
Other related data sheets: _____	

DC's Name

Is report arriving in CP section observed or being sent by it?

What type of report is involved?

When was the report received/sent?

When was the essential information in the report first recognized by a staff member in a position to act on it?

Check a box for each report element type represented. If details of an element type can be usefully summarized, do so on The Adjoining Lines.

Where did the unit sending the message obtain the data in it?

List any data sheets from actions connected to this report (e.g., an assessment made after reading this report, etc.)

Time when DC "opened" form

CP section where DC made observation

Originating CP/CP Section & designated recipient(s)

Summarize the important details of the report.

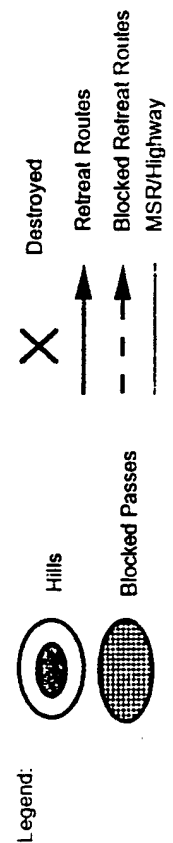
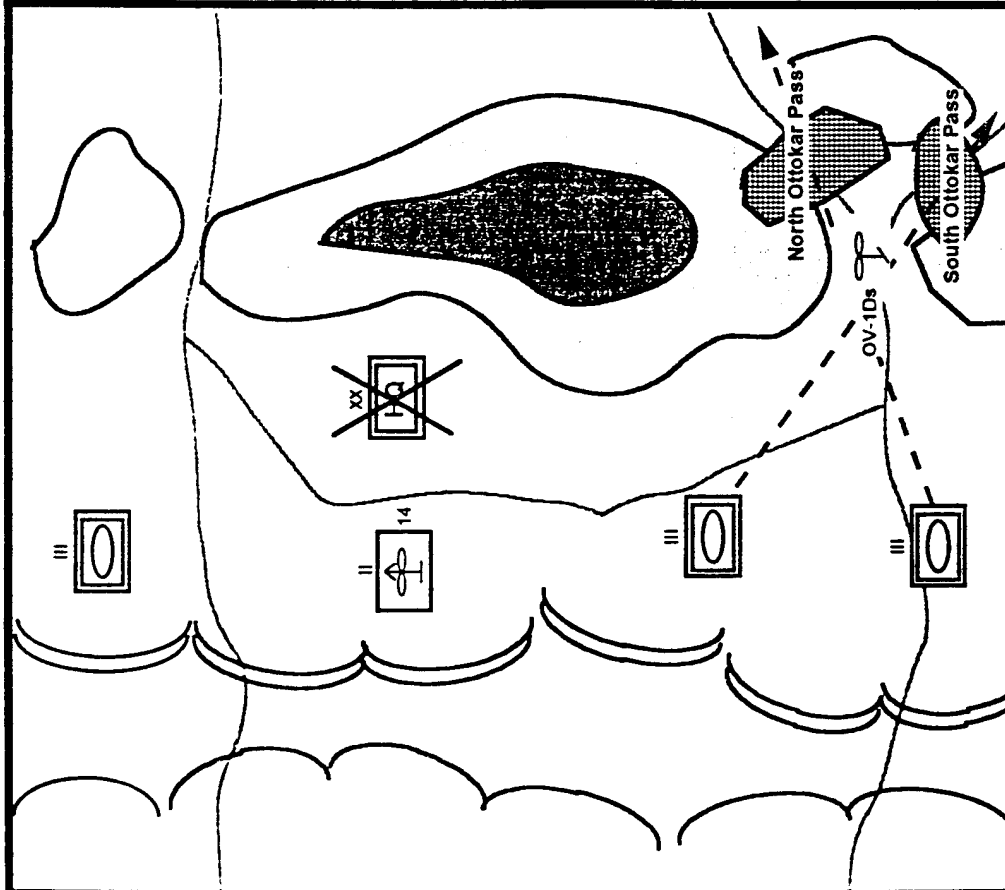
For SITREPs and INTSUMs, when should it have been received?

How was the report sent/received? (The same report sent over more than one medium should have separate times listed for each medium.)

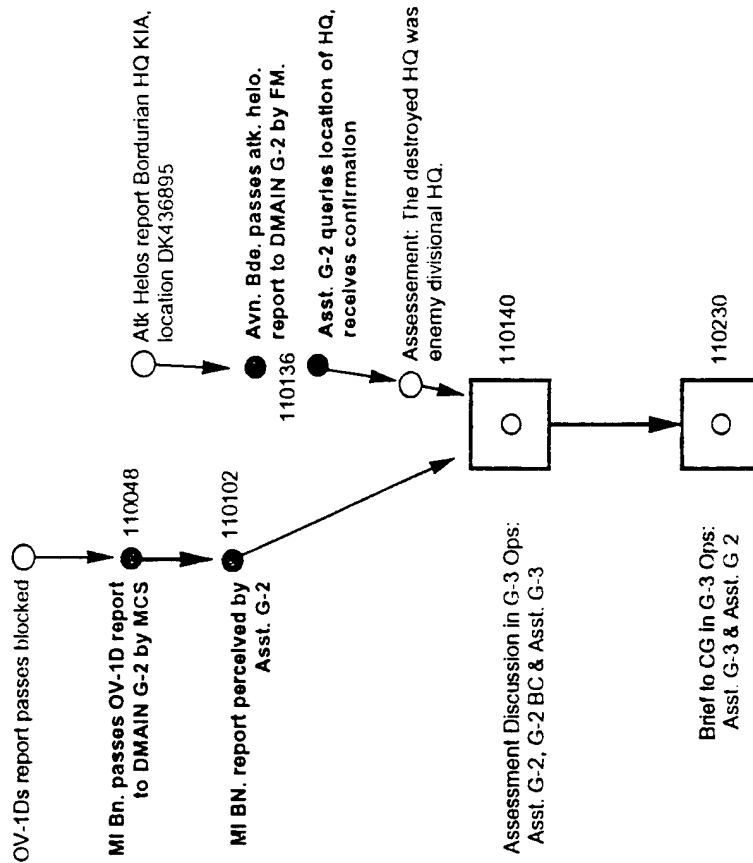
If the CP Location receiving the report questions one or more report elements, mark those elements and summarize the nature of the query. "Garbled, retransmit" Or "say again, Red Six" do not qualify as queries.

Information Handling

Illustration



Timeline



INFORMATION HANDLING MEASURES (IH) ACCES 93:

Observer: _____ Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Report Is: Incoming ☐ To: _____

Outgoing ☐ From: _____

SITREP ☐ INTSUM ☐

Operation Report ☐ Spot Report ☐

Warning Order/Directive ☐ Weather And Terrain Report ☐

Brief description of contents: _____

Time report is due (scheduled reports only): _____

Time report/warning order/directive is received (all incoming)/sent (all outgoing): _____

Time report/warning order/directive is perceived (all incoming): _____

Medium of transmission:

FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

If a report, mark all elements addressed:
Provide element details where available.

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

If a report is queried, mark all elements queried:
If report queried, by whom? _____

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

Source of data in report: _____

Other related data sheets _____

Information Handling (IH)

Common Mistakes in Data Collection

- Not reviewing the SOP reporting cycles before reporting for duty.
- Inaccurately reporting an unscheduled report as a SITREP or INTSUM.
- Not noting a query or follow-up to clarify a report.

Information Handling (IH)

Summary

Observations of information handling require the ability to discriminate types of reports.

Track scheduled reports per the SOP; unscheduled reports as they occur.

Note queries and follow-up by the staff.

ACCES Preparations

ACCES Preparations

PURPOSE to field a competent *team* of ACCES observers capable of collecting the data needed to deliver *reliable* feedback to the training unit Commander and his staff by:

- Providing first rate training.
- Highlighting excellence in each aspect of observer performance.
- Summarizing essential skills and behaviors for the observer.
- Defining and meeting high standards.

ACCES Preparations

Assignments

- Exercise Control
- DMAIN G-3 OPS
- DMAIN Plans
- DMAIN G-2
- DTAC
- DREAR
- Brigades
- Other

ACCES Preparations

Typical Day

"There is no such thing as a typical day for an ACCES Observer. Each day brings uncertainty and chaos. The only way to survive is to assume the size of a fly, the attitude of a champion, and the audacity of a Bonaparte."

source: ARI Board of Inquiry, "Abuse of the Observer, Part One", Jan 90.

- 12-hour shifts (excludes handover and travel time).
- Observation keyed to planning and decision cycle.
- Over-Stimulation.
- Weight loss, tension headaches, fatigue.

Minimum Activity

- Track the Report Cycle
- Monitor Shift Handovers
- Maintain a Situation
- Prepare for Handover

Probable Activity

- Displacement
- Decision Briefings
- High Profile Visitors
- "The Unexpected"

ACCES Preparations

The Goal

To unobtrusively, reliably, and objectively record the understandings and perceptions that drive decisions and the process of implementing them.

OBSERVER JOURNAL

Observer: _____ DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____ Date-time-group _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

[illegible]

ACCES Preparations

Shift Change

Shift change is the orderly transfer of perceptions and understandings between two observers without disruption to the data collection activity

- *Punctual* isn't enough (30 minutes early).

- *Prepared* to handover and receive critical information:

- decisions made or in process,
- open actions,
- location of the decision makers,
- current situation,
- who is in charge,
- future operations,
- problems or personalities.

- *Professional*

ACCES Preparations

Key Division Personnel

When all else has failed, keep your boots shined and "shadow" the senior man present.

source: Layton, Memoirs of an Observer, 1988.

Name	Call Sign	Name	Call Sign
Commanding General		DIVARTY Cdr	
ADC (MMO)		1st Bde Cdr	
ADC (S)		2d Bde Cdr	
Chief of Staff		3d Bde Cdr	
G3		Avn Bde Cdr	
G2		DISCOM Cdr	
G4		Fire Spt Off	
G5		C-EO	
G1		ALO	
Chief, G3 Plans		NBC Off	
Chief, G3 Current Ops			
Chief, Intel Collection Mgt			
Chief, G2 Operations			

ACCES Preparations

ACCES Team Roster

Day Shift _____ (TIME)	Node	Night Shift _____ (TIME)
	OIC	
*	Div Main, G3	
	Div Main, G2	*
	DTAC	
	DREAR	
	Analyst/Control	
	Senior Analyst	
	____ Bde	

* denotes Senior Observer position

ACCES Preparations

CP Locations

NODE	DAY						INDEX 6
	STARTEX 0	1	2	3	4	5	
Division Main							
DTAC							
DREAR							
_____Bde							
_____Bde							

*** denotes planned night movement**

ACCES Preparations

Regulations

- Safety First
 - Fatigue
 - Safe Driving
- Security Badges
 - Display On-Site
 - Secure and Conceal Off-Site
- Passwords
 - Procedure
 - Keep Yourself and the Team Current
 - This is Not a Game!
- Food, Drink, Smoking & Other Fraternizations
 - Maintain Local Rules
 - Join the Coffee Fund
 - Don't impose on the Unit

ACCES Preparations

Conclusion

Just doing things right is not the role of the observer,
it is doing the right things that matter.

APPENDIX B

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

ANALYST PROGRAM OF INSTRUCTION

Guidance for the Instructor of the Analyst Training

Purpose of the Instruction

The purpose of the Analyst training is to produce analysts skilled in implementing the Army Command and Control Evaluation System (ACCES). Effective instruction will minimize training time, improve measurement reliability and enhance the validity of the application. The training covers standardized ACCES measures and analysis and reporting methods to produce analysts who perform consistently using the specified procedures.

Instructors should be aware that those passages of this program of instruction that refer to or draw from US Army publications utilize those available to the authors during the initial development of this product. Do not assume that all information is current and authoritative; refer to current manuals!

Training Overview

This instruction is skill oriented to produce acquisition of specific analysis and reporting skills. It is not designed to prepare the Analysts for any specific application. The training is generic in that it applies to all types of ACCES applications. If new analysts are being trained with this POI immediately before an exercise, those who attend the exercise should also attend portions of the observer training depending on what their exercise assignment is. This POI can be administered anytime outside of an ACCES application.

There are seven lessons. Within each lesson there are in order:

- text providing the lesson flow and a lecture for the lesson,
- material which the instructor must reproduce for distribution during instruction, and
- viewgraphs (VGTs).

An Analyst Guide is available and should be distributed to all analysts before training and to experienced analysts who don't have it, as it contains current reference material. The Guide contains much of the material in the POI; Analysts can use the Guide as a ready reference. The lessons repeat and add to the material in the Guide. A complete set of VGTs should be organized in folders by lesson and provided to the students at the beginning of this course.

The following list offers a brief overview of the contents of the seven lessons:

Lesson 1A: "What is ACCES?" (30 mins) Provides an introductory overview of the purpose and methodology of ACCES. Lecture, quiz, and answer sheet, and supporting VGTs.

Lesson 1C: "What Does the ACCES Team Do?" (15 mins). A summary of the primary roles of observers and analysts. Lecture, handout ("What Does the ACCES Team Do?"), quiz and answer sheet, and supporting VGTs.

Lesson 3A: "The ACCES Process from an Analyst's Perspective" (30 mins). Provides an overview of the ACCES application highlighting the Analyst roles from prior planning through reporting. Lecture and supporting VGTs.

Lesson 2C: "Data Reduction" (90 mins). A description, examples, and practice in reducing data to the prescribed format. Lecture with supporting examples and VGTs. This lesson provides an overview of the measurement categories, data elements and data reduction sheets. Provides the analysts with an understanding of what the observer will have to do to provide adequate information.

Lesson 3C: "Data Analysis Fundamentals" (120 mins). An overview of data manipulation including more sophisticated analysis appropriate for identifying trends within and across data sets. Lecture, in-class exercises, examples and supporting VGTs.

Lesson 3D: "Integrating the Analysis" (45 mins). Techniques and rationale for integrating across the data reduction forms to tell the story of the exercise. Methods for obtaining insights from the data. Lecture, examples and supporting VGTs.

Lesson 3E: "Reporting" (45 mins). An overview of reporting formats and suggested outlines. Relationship to the purpose of the application is emphasized. Lecture and supporting VGTs.

Learning Objectives

The ACCES training program is based on a set of Terminal Learning Objectives (TLOs) and Enabling Learning Objectives (ELOs) that support all the different training applications.

Terminal Learning Objective (TLO) One. Recognize. Given examples and practice during training, the observer will be able to discriminate primary data sources (events and documents). The following Enabling Learning Objectives are related to TLO 1:

- 1.a Use the Observer Guide and job aides as a resource to perform duties.
- 1.b Describe the unit's planning and decision cycle.
- 1.c Interpret standard military map symbology related to unit type, unit size and control measures for friendly and threat forces.
- 1.d Discriminate among military reports needed to complete the data reduction sheet.
- 1.e Determine the UTM coordinates from a military map in accordance with the unit's standard method. For example, read coordinates from low left corner of the unit symbol.

Terminal Learning Objective Two. Record. The observer will be able to take notes in a chronological order within a journal which includes specified data elements. The following Enabling Learning Objectives are related to TLO 2:

- 2.a Maintain an annotated chronology of events in a journal which includes name of the event or document and comments on each data element.
- 2.b Select the appropriate ACCES data reduction instrument.
- 2.c Prepare the ACCES data reduction instrument appropriate to the data reduction task from observations and journal entries.
- 2.d Verify data entries through records, reports or interviews of the accessible population.

Terminal Learning Objective Three. Analyze. Given data from observers, scoring forms and procedures for analyzing data, the analyst will be able to assess performance data for consistency, accuracy, and completeness. The analyst will compute the scores for ACCES measures from the data according to formulas provided. Analysts will interpret scores according to suggested procedures and to support briefings and reports. The following Enabling Objectives are related to TLO 3:

- 3.a Interview observers and check data reduction forms to verify and complete information.
- 3.b Organize data for analysis.
- 3.c Use ACCES scoring procedures.
- 3.d Integrate data.

Terminal Learning Objective Four. Report. Given the analytic results, the analyst will prepare documentation of the ACCES findings. The following Enabling Objectives are related to TLO 4:

- 4.a Complete graphical displays.
- 4.b Write a report of findings using the prescribed ACCES report format.
- 4.c Prepare information briefings using the prescribed ACCES briefing format.

Terminal Learning Objective Five. Team Building. Given access to the training materials and opportunity to practice the methodology, the observers and analysts will function as a mutually supporting team. They will understand the ACCES roles and how they support each other.

Preparation for Training

To prepare for teaching this course, the 2 to 1 rule should be followed. That is, it takes two hours to prepare for every hour of class you will instruct. Therefore, the assignment to instruct the course requires a serious commitment. You must be familiar with the material and do significant preparations. There are several documents available for ACCES applications. They are the appendices in this document. The material should be presented in the order described above. Each instructor should prepare his own schedule and assignments if more than one instructor is used.

This instruction requires the Analyst POI, the accompanying transparencies, and the Analyst Guide as a read-ahead and in-class package. A checklist of duties for the instructor is provided below:

- Familiarize yourself with each lesson.
- Familiarize yourself with previous ACCES reports.
- Familiarize yourself with the Analyst Guide.
- Familiarize yourself with the measures and data reduction sheets.
- Assemble the transparencies.
- Reproduce and distribute the Analyst Guide ahead of time if possible.
- Reproduce the student handouts and quizzes.

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

Lesson Plan

Introduction: What Is ACCES?

POI File: 1A

Introduction: "What Is ACCES?"

General

The lesson will provide the student with an understanding of the Army Command and Control Evaluation System (ACCES), its use as a measurement methodology, and its purpose.

Time for completion: 60 minutes.

Learning Objective

Task: Identify the components of the ACCES methodology.
Condition: Given the ACCES Program of Instruction, the ACCES data reduction forms.
Standard: The students will achieve scores resulting in 85% correct responses.
Method: Lecture, discussion, quiz

Presentation Guide

Introduction

Attention. Students of military art and science are required to analyze a complex planning and decision process to produce conclusions about unit effectiveness. (Display VGT No. 1A-1--Headliner) As the nature of modern warfare has become more technologically sophisticated, the amount of information which must be processed to plan, organize, direct, and control operations has increased, while the time available to complete this process continues to shrink. Measuring the quality of the unit's command and control (C2) is a primary concern, but the data needed to perform accurate, timely assessments of C2 quality are elusive. It is important to look at the whole process, not just segments, in order to derive an accurate assessment of the unit's C2.

Motivation. The ACCES methodology makes it possible to collect data on C2 systems across settings and over time. The data thus collected are employed to perform credible evaluations of large unit performance. As ACCES data collectors and analysts, you are the instruments of this process.

Development

Let's define some terms so we have a common framework for discussing ACCES. (Display VGT No. 1A-2--

Terminology)

Analysis: the act of manipulating, comparing, and correlating data to derive conclusions. Those members of the ACCES team who carry out this procedure are the analysts.

Application: the whole procedure by which ACCES data are collected, reduced, and analyzed during and subsequent to a particular exercise.

C2 Evaluation: the judgement, based on measures and data, of C2 process quality. Evaluations can be either qualitative or quantitative.

C2 Performance: the overall C2 effectiveness of a headquarters. The evaluation of performance is the ultimate task of ACCES analysts.

C2 Document: a written or computer-based product of a C2 event.

Coding: the transformation of raw data onto data sheets.

Computation: assignment of numbers to objects or events according to a set of rules (or manipulation of numerical data) by the analysts in order to convert reduced data into measures.

Data: discrete elements extracted from document(s) or observed event(s) that are used to describe performance.

Data are considered "raw" if they have not been reviewed, edited for inadvertent errors, and reduced onto data sheets. Once these steps have been taken, the data is said to have been "reduced" or "refined".

(Display VGT No. 1A-3--Terminology Continued)

Data Collection: the act of recognizing the important data elements of the event or document, and recording those data elements by time and location. Also referred to as "observation". Data collectors (or "observers") are responsible for carrying out this activity.

Data Reduction: the act of transforming data from raw notes or a coded form into refined data usable in computation. Data reduction includes coordination among data collectors to combine observations and insights on events not observable by a single data collector.

DTG: The Date-Time Group. The DTG employed with ACCES in a six digit identifier of day (first two digits) and military time (last four digits). Actual (local) time is always used for all data, with any anomalies being carefully noted for resolution by analysts.

Effectiveness: the ability of the unit to achieve the desired effect of an activity.

Environment: the physical and conceptual battlefield surroundings in which a CP operates. The environment includes METT-T; adjacent, subordinate, and superior HQs; the scenario; the unit SOP.

Event: an observable occurrence which is discrete in terms of time and place. Some events may not be observable by a single data collector due to the length of time or the breadth of area over which they take place.

Observation: see "data collection".

Plan: the means by which a headquarters structures its attempts to change or influence the battlefield environment. Plans are the central focus of ACCES evaluations.

Reliability: the consistency of the data collection process.

Quantitative: summary of performance by the assignment of numerical values.

Qualitative: summary of performance by the assignment of characteristics or attributes.

ACCES is a process-measurement tool employed to assess the overall performance of Army headquarters (principally divisions, but also brigades and corps) at various stages of the C2 cycle. [This POI focuses on

division-level applications.] ACCES is composed of various data collection and analysis procedures which are implemented by a team of analysts and data collectors. ACCES is based on three underlying assumptions:

1. Division headquarters operate as adaptive control systems that collect information from the environment, process the information, produce and disseminate plans to adapt to the perceived environment and shape it favorably, and monitor the implementation of these plans so as to facilitate and control change of and in the environment.

2. The C2 operating system is made up of interdependent processes that are derived from Army doctrine and articulated through unit SOPs and the Commander's intent. A model of the system is illustrated here. (Display VGT No. 1A-4--ACCES C2 Model)

3. The activity associated with each process can be observed. The activities are composed of events of a predictable type that define the type of data that you will be able to collect. Remember, the gist of the job is to capture the dynamics and information flow going on all around you -- particularly during situation assessment and decision making. At each location you must try to observe and record:

- what people did,
- why they did it,
- what they knew,
- how they knew it, and
- when each event occurred.

ACCES provides meaningful conclusions and insights about C2 performance through collection, reduction, and analysis of observations. Consolidation of data across settings over time will produce reliable information about unit C2 performance.

The goal of ACCES in division-level exercises is to obtain direct measurements of headquarters C2 performance. (Display VGT No. 1A-5--Goals) The application of ACCES requires previous knowledge of C2 functions, adherence to unbiased data collection technique, and objective analysis of this data. When properly implemented, ACCES will provide qualitative and quantitative evaluation of unit performance. The ACCES framework leads to a natural structuring of the analysis which can provide insights into critical problems and lead to examinations of possible causes.

The successful application has three phases: preparation, collection & reduction, and analysis.

Preparation Phase

This phase of the application begins as soon as possible after the exercise is scheduled. Five tasks are carried out during this phase: (Display VGT No. 1A-6--Preparation)

- Review Exercise Objectives. This includes identification of the training goals, scenario, and the exercise schedule. A successful ACCES application requires that certain sections within the headquarters be

observed in accordance with data collection procedures and be assessed using analytic rules and procedures. In addition, prior knowledge of the scenario and of the master events sequence list (MESL) prepares the observer for crucial C2 events. Being in position to record the needed data at the correct time, without being intrusive or compromising the scenario, is essential.

- Compile Data Collection Plan. Included in these early stages of the plan is the selection of the ACCES measures to be employed, and hence the data to be collected for this particular application, while keeping within the bounds of the exercise environment and available data collection resources.
- Select Data Collectors. A team of well-trained collectors is required to record the pertinent events as they occur and to reduce the data into a format suitable for analysis. Identification of observers begins as soon as exercise dates are known, so that schedules can be coordinated for travel and training.
- Brief Staffs. All staff elements participating in the exercise are briefed regarding the application process and the need for their support. Also, the process of determining observer placements is begun at this point.
- Publish Data Collection Plan. This plan is an evolving document, written as a guide to achieving the ACCES application objectives, providing observer instructions, and establishing a common framework for the application.

Collection & Reduction Phase

This phase begins immediately preceding the actual exercise and consists of the following four tasks: (Display VGT No. 1A-7--Collection & Reduction)

- Train Collectors. Formal classroom training of the collectors in ACCES data recognition and collection techniques is conducted.
- Data Collection. Collection of exercise data requires concentration and trained judgment. A full understanding of the data required to compute the measures is essential for effective data collection.
- Review and Consolidate Data. Frequent review of data and collection methods by roving supervisors prevents loss of essential information. Daily exchanges of observations between collectors are useful, but may not be practical. Some data are coded during the exercise, either by collecting directly onto data sheets or by collectors coding during "quiet time".
- Reduce Data. Data collected during the exercise are coded onto ACCES data sheets. Coded data are checked for clarity and consistency. Collectors liaise in order to exchange data on events crossing shifts or occurring in different CPs.

Analysis Phase

This phase is the culmination of all prior efforts and consists of three basic tasks: (Display VGT No. 1A-8--

Analysis)

- Compute Scores. ACCES scores are calculated from the reduced data.
- Develop Insights and Conclusions. Scores are analyzed in the context of the exercise objectives. Evaluations of performance are made. Insights as to the strengths and weaknesses of staff performance are derived from both the scores and observers' notes. Also, command and control trends are analyzed, based upon the current and past applications.
- Prepare Results. Scores, insights, and trends are reported in a briefing format and/or in a written document.

These phases and activities are summarized in this graphic representation of the flow of data. (Display VGT No. 1A-9--ACCES Data Flow) It demonstrates the sources, techniques, and processes by which data are captured and transformed into measurements and thence to reports, in order to fulfill the goals of performance measurement and systemic feedback, and to aid in the identification of causal relationships in C2.

The last step in explaining ACCES is to briefly introduce you to the data reduction forms. (Display VGT Nos. 1A-10, 11, 12, 13, 14, 15 in succession) As you see, all these forms share a header; this requests information that is invaluable to those undertaking the analysis of data. Data collectors must always indicate on each data sheet their name and location, and the DTG of the event that they are coding. The other information required by each separate form will be covered in the following lessons.

1A Quiz

The instructor now hands out the ACCES Methodology Comprehension Short Test; after the students have filled out their answers, the instructor should give the correct solutions, answer questions, and facilitate any discussion.

Conclusion

Final Summary. (Display VGT No. 1A-16--Summary) This, then, is the ACCES methodology, a process-measurement tool that can be applied to report on C2 performance at division-level headquarters. It must be emphasized that ACCES is not a mechanistic process, but one which must look at the whole of C2 in order to derive a credible and accurate assessment.

Remotivation. Understanding the role of ACCES and the important contributions you make to understanding C2 performance are part of a vast undertaking. The success of the ACCES team will be reflected in the quality of feedback about C2 process performance to the training unit.

Closure. Now you have the framework - the what and why needed to learn the specific techniques and skills used by Data Collectors.

QUIZ for "What is ACCES?"

True-False

- _____ 1. The data collection plan is constructed by the data collectors and reflects the way in which they collected the data.
- _____ 2. All staff elements participating in an exercise where an ACCES team conducts an application should be briefed beforehand.
- _____ 3. Analysts reduce the raw data produced by the data collectors into a form they can use for computing measures.
- _____ 4. ACCES is intended to produce qualitative as well as quantitative evaluations of performance.
- _____ 5. ACCES only obtains indirect measurements of C2 effectiveness.

Matching

(Select the letter from the list a through g corresponding to the correct answer.)

- | | | |
|-----------|--|--------------------|
| 6. _____ | The transferring of raw data onto data sheets, either during the exercise, or during data reduction. | a. analysis |
| 7. _____ | The battlefield surroundings of a CP. | b. coding |
| 8. _____ | An observable occurrence discrete in terms of time and space. | c. computation |
| 9. _____ | Using data to derive conclusions. | d. data collection |
| 10. _____ | The assignment of numbers to objects or events, transforming data into measures. | e. data reduction |
| 11. _____ | Recognizing and recording the important data element(s) of an event or document. | f. environment |
| 12. _____ | The assignment of characteristics or attributes to summarize performance. | g. event |
| | | h. quantitative |
| | | i. qualitative |

Multiple Choice

(In each case, select the single alternative that answers the question accurately.)

- 13. In the header section of each data sheet, you **must** fill in:
 - a. the DTG only; other items are optional
 - b. the DTG and your location; other items are optional
 - c. the DTG, location, and name
 - d. your name and the DTG
 - e. your name and location; the DTG is sometimes impossible to get
- 14. Data concerning an event that occurs across shifts or CPs:
 - a. cannot be coded
 - b. can only be coded by observers coordinating during the exercise
 - c. can only be coded by analysts during analysis
 - d. can be coded in data reduction by coordinating among observers at different shifts & CPs
 - e. this circumstance will not arise
- 15. If an event takes place at 7.05 p.m. on the 3rd of May 1992, what DTG should be recorded on an ACCES form ?
 - a. 03May921905
 - b. 0305920705
 - c. 031905
 - d. 030705Z
 - e. none of the above

Introduction: "What Is ACCES?"

ANSWER SHEET

for

Quiz: What is ACCES ?

1. F
2. T
3. F
4. T
5. F

6. b
7. f
8. g
9. a
10. c
11. d
12. i

13. c
14. d
15. c

each answer is worth 7 points

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

Lesson Plan

Introduction: What Does the ACCES Team Do?

POI File: 1C

Introduction: "What Does the ACCES Team Do?"

General

This lesson will provide the analysts with an introduction to the roles and responsibilities of the ACCES team. This introduction orients the attention of the observers and analysts for the remaining units of training.

Time for completion: 15 minutes

Enabling Learning Objectives 1A, 5A

- Task: The analyst will recognize the responsibilities of recognition, recording, data reduction, analysis, and reporting. He or she will have a basic understanding of the roles of observer and analyst, the responsibilities of each, and how they work together.
- Condition: Given the ACCES Analyst's Guide and this lesson.
- Standard: Each analyst will correctly identify all five of the major responsibilities and whether the responsibility is assigned to the observer role or analyst role. The student will correctly identify when the roles must cooperate to carry out a responsibility. A quiz will be used to determine if the student has been properly oriented.

Presentation Guide

Introduction

This lesson provides a quick overview of the roles and responsibilities of the ACCES team. (**Display VGT No. 1C-1--Roles and Responsibilities**) By identifying your responsibilities prior to the exercise, you will be better prepared to learn and carry out the responsibilities.

Attention. Getting the most out of observing an exercise or testing event requires that a number of people work together as a team. If any one person fails to do their job, the work of the whole team is diminished. The best way to carry out your job is to be sure you understand your role and responsibilities and the roles and responsibilities of each team member.

Motivation. Training and testing events are conducted at great cost to the government. In order to carry out your role and to maximize the benefits of the event, it is imperative that you carry out your role and responsibilities as defined by the ACCES methodology. This lesson will also help you start the team building that will insure a successful ACCES application. A brief quiz at the end of this 15-minute lecture will assess your basic understanding of the roles and responsibilities.

Development

Roles. There are two basic roles on the ACCES team: Observer and Analyst. The ACCES Observer is responsible for providing data needed to determine how the command and control process was performed. This requires unobtrusive, unbiased, unfiltered reporting of the data. The observers are the key players in the ACCES implementation because they are the direct interface with the staff. An observer spends a 12-hour shift each day in the work area of the military unit. The observer is the key to making ACCES work. An observer is there to keep an account of events, but not to influence events.

Introduction: "What Does the ACCES Team Do?"

An ideal observer is prepared, persistent, polite, alert, unobtrusive, efficient, security-conscious, professional, consistent, a team member, positive. (Display VGT No. 1C-2—Characteristics of an Ideal Observer) The Student Handout describes these characteristics.

The ACCES analyst collects, verifies, and analyzes C² performance data provided by the observers. This requires the collation, integration, and correlation of data across command functions, command nodes, and time. The analysts are key to the development of meaningful diagnostic and systems feedback about C² performance.

Responsibilities. An ACCES team has five basic responsibilities: Recognition, recording, data reduction, analysis, and reporting. Recognition is knowing what you are looking at as an observer and discriminating what is important. There are events to examine and documents and maps to recognize. The events, documents, and maps require the observer to record certain information in a chronologically ordered journal. At the end of the exercise, once the journals are complete, the team performs data reduction as a group with both observers and analysts working together. They use notes, memories, and exercise-generated documents to reconstruct the exercise, then they complete data reduction sheets. During this time, the analysts ask questions and check information to verify that the information is complete and accurate. Analysts then take over the data reduction forms, organize the information, and compare findings across the unit. Finally, the analysts prepare a report about the findings. The analysts may also have to display the findings in briefings including pie charts, graphs, tables, etc. (Display VGT No. 1C-3—Five Basic ACCES Team Responsibilities)

There are a few other responsibilities which support the ACCES application. These supporting responsibilities are: shift handover, security, teamwork, pre-exercise knowledge, and confidentiality. (Display VGT No. 1C-4—Additional Responsibilities)

Each responsibility is supported by a number of skills and tasks. This training program will provide information about those tasks and practice in the skills.

Method

Lecture

Quiz

Conclusion

Final Summary. At this point you should clearly understand the five responsibilities of the ACCES team and how the roles of observer and analyst carry out those responsibilities.

Remotivation. To help you judge if you are clear on the roles and responsibilities, a short matching quiz will be administered. Self-score the quiz.

Closure. Clarify any questions on the quiz which have been incorrectly answered. You may find that you need extra help in preparing for one or more of the responsibilities. After the training session, think about which responsibilities you may need extra help in. The handbook and pre-exercise documents provide you with a lot of information, and your team members also have expertise in a number of areas. Ask for help or clarification.

QUIZ
for
Lesson 1C: "What Does the ACCES Team Do?"

1. Match the following responsibilities with their definition by putting the letter from the definition in the right hand column into the blank in front of the corresponding responsibility in the left hand column:

___ Recording	A. Being knowledgeable of the order of battle, training/exercise objectives, the flow of events, existing plans, exercise area, unit organization, physical layout of CP, staff processes, routine events, and principles of ACCES data collection.
___ Data Reduction	B. Compiling notes of key events, arriving on time, attending short team meetings as called.
___ Data Verification	C. Collecting data reduction forms, organizing information, manipulating data, comparing findings in one area with findings in another, comparing findings with predetermined hypotheses about the exercise.
___ Shift handover	D. Sharing information on a "need to know" basis only. Discussing unit performance and unit names only within the ACCES team.
___ Analysis	E. Covering observation posts for another observer when needed, sharing information, alerting others to critical events, working together to verify data.
___ Present/Report Findings	F. Making notes about various exercise events and documents in a chronologically ordered journal. Capturing the important data.
___ Display Findings	G. Constructing pie charts, graphs, tables, briefing charts, etc. to convert data into a visual image. Writing text to support the graphics.
___ Maintain confidentiality and security	H. Using observers notes, memories, and exercise-generated documents to complete the ACCES data reduction sheets.
___ Recognition	I. Discriminating the different kinds of exercise events and documents. Knowing which ones are important.
___ Mastery of Pre-Exercise Knowledge	J. Delivering final written reports and briefings.
___ Teamwork	K. Checking completeness of data reduction forms, questioning other team members or members of the training unit, or studying exercise-generated documents to clarify information.

2. Fill in the blank. If the responsibility is carried out by the observer, fill in O, or if by the analyst, fill in A. If the responsibility is shared or done by both the observer and analyst fill in O and A.

- A. Recording _____
- B. Data Reduction _____
- C. Data Verification _____
- D. Shift handover _____
- E. Analysis _____
- F. Present/Report Findings _____
- G. Display Findings _____
- H. Maintain confidentiality and security _____
- I. Recognition _____
- J. Mastery of Pre-Exercise Knowledge _____
- K. Teamwork _____

ANSWER KEY
FOR
QUIZ - LESSON 1C

1. F, H, K, B, C, J, G, D, I, A, E.
2. O, OA, OA, OA, A, A, A, OA, O, OA, OA.

Student Handout

Lesson 1C

"What Does the ACCES Team Do?"

Prepared

It is not possible to walk into a CP and begin taking high-quality data without a prior understanding of the exercise environment. The observer must take the time and make the arrangements to know what is knowable. It is not unusual for some observers to be more aware of key aspects of an exercise than many of the participants. Among the things it is possible to know, and that the observers need to master in advance, are:

- the order of battle, both for friendly and enemy;
- exercise objectives and points of emphasis in training;
- the flow of exercise events;
- existing plans and significant message traffic relevant to them;
- the terrain involved in the exercise;
- the organization of the exercising force and its relationship to other commands;
- the physical layout of the CP, message center, or other relevant activity sites;
- the basic work process used by the staff;
- routine schedules, orders, briefings, plans, intelligence summaries, or other CP products; and
- the principles of ACCES and the process of data collection to support ACCES analyses.

Any of these factors that the observers do not know in advance will take time to learn during the exercise and distract from the main task of gathering information.

In addition, being prepared includes the simple procedural responsibilities essential to maintaining continuous presence. Having supplies (collection forms, clipboards, writing instruments, etc.) is obvious, but essential. If breaks are to be taken for meals, having a schedule for observer rotation and arrangements for use of the mess facilities are important. If no breaks are expected (many observers find that significant decisions are often made during meal breaks), or if only one observer is at the site, having candy bars or other "snack food" available becomes important. Similarly, ensuring unobtrusive access to a message file and automatic collection beforehand frees up the observer during exercise play.

Persistent

The quality of data obtained is directly related to the observers' efforts to collect it fully. Excellent observers have established their need for access before the exercise begins and ensured that the commander and his staff are fully aware of it. During the exercise, they must assume they are welcome to listen in on any relevant conversation. By asserting their access early, they accustom the staff to their presence and remove the question of later access. At times, this means accompanying a Chief of Staff or Operations Officer to a decision meeting.

During briefings and decision discussions, the observers must position themselves where they can hear. This may require teamwork on large staffs. In addition, the principle of persistence requires that the observers not become distracted but focus on the key perceptions and ideas that are voiced during decision making. Reading over the Operational Officer's shoulder, listening as an Intelligence Officer explains a new unit sighting at the map, noting a radio call unanswered, etc, require a determination to know what is going on. The continuous presence of observers is one of their unique characteristics and provides a basis for many of ACCES's most useful measures.

Polite

Observers are guests in the CP and should behave as though they understand this. The purpose of the exercise is training, with assessment being one form of feedback on its effectiveness. Observers should be ready, if requested, to explain what they are doing and why, and to provide reference to (a) the messages or other sources that provide the reasons for their presence, and (b) a point of contact for briefings or other information on ACCES and its products. Thanks are due to the Commander and those of his staff who supported the observers, and should be provided at appropriate opportunities and at the end of the exercise.

Alert

CPs are busy places. By being familiar with the physical layout and work processes of the staff under study, observers can learn to detect the presences of new information or new action items. Early in the exercise, excellent observers learn the names and faces of key participants so they can follow events more easily and make notes that trace the flow of information or action. It is not uncommon for an observer's journal to note radio calls that went unanswered, periods of time during which new data or enemy locations were not posted to maps, or other simple errors that would otherwise go unnoticed.

Unobtrusive

Observers must find ways of blending into the background. Their personal belongings (coats, briefcases, etc.) need to be stored out of the way (invisible to the staff). They must find places to stand that do not interfere with the work flow or block the view of status boards, maps, or other decision aids. They do not interfere with the flow of the exercise, by providing either warning of upcoming events or feedback on performance. They may inquire, at a time and place that does not intrude on the exercise, why a command took a particular action, but they may not ask why an action was not taken. Asking why something was not done is tantamount to suggesting a new course of action, which is interference.

Efficient

The amount of activity in a CP can be large; observers who are not efficient will be overwhelmed. Being prepared, meeting the players, and knowing their roles will help. There also are several simple procedures that will save time. For example, a blank template can be developed for status boards in the

CP and filled in during "quiet time." The notes on action status updates then can become recording by exception -- focusing on the changes and their timing.

Note-taking can be speeded up greatly by the use of acronyms or initials, but only if the observer keeps notes on the meaning for later interpretation. Written messages should be referred to by date-time-group, which will allow their identification during the analysis phase. Many experienced observers also annotate their notes to identify key items (Understanding = U, Decision = D, Alternative Action = A) and put in comments about procedural errors (unanswered radio call from ___, new position for a Tank battalion not plotted for 45 minutes, etc.) This saves considerable time later in generating data sheets.

Security Conscious

Having established appropriate need-to-know prior to the exercise, observers must remember that they are outsiders and therefore represent a potential source of security problems to the command. Awareness in this area is high. By establishing ahead of time where materials can be stored, making observer notes correctly, and using proper storage procedures, the observers help prevent such issues from arising. Exercises often involve security materials for which observers may not be cleared. Obviously these proper limits should be respected. At the same time, cleared observers with established need-to-know can and should persist in gaining access. Notes must be handled properly for the information they contain. Visible security awareness is an essential attribute of effective collection.

Professional

The staffs are composed of professionals. Their respect can be earned only by professional behavior. The long hours both groups must work during exercises is one form this takes. Being prepared is another. Maintaining a posture of interest and learning the "jargon" of the staff also aid communications. Little things, such as being on time (or early), delivering on small requests (arranging an ACCES briefing), and answering questions even when it requires that you go out of your way to get the information, go a long way in this arena. Do not express opinions or render judgments on topics beyond your personal experience or expertise. Defer requests for feedback until after the analysis is completed. Do not, in attempting to be obliging, do the staff's work for them!

Consistent

The continuous presence of observers allows collection of compatible data over time and across situations. This opportunity is wasted unless each observer makes notes on the events at hand and takes the time, both during exercise play and while completing data sheets, to ensure consistency of scoring. Seeking help from senior ACCES team members and comparing notes with other observers can help here.

A Team Member

Collection of data is a team effort. At the multi-observer locations such as DMAIN, observers

should operate as a team and cover for one another when heavy activity occurs in one arena while others are less active. At Brigade level this is not possible, but observers should be alert to noting items from other commands that may prove valuable to the overall collection. For example, a directive that causes confusion, consternation, or delay may look perfectly clear at the headquarters that issued it unless queries, confusion, or objections are recorded at the receiving locations. All observers should be alert to the importance of information and perception comparability.

During the data reduction and analysis phases, the team role of observers becomes obvious to all concerned. Unless notes have been kept with that in mind, however, the reconstruction of important control cycles becomes difficult and time-consuming.

Positive

The tone conveyed by an excellent observer is positive and helpful. Success is expected both from the exercise and the collection perspective. Notes are taken in positive terms. Notes should be made or possible solutions to problems observed (but not presented until after analysis--see "unobtrusive"). Whenever possible, reports and feedback should be complimentary. Credit should be given to staffs that solve their own problems, improve procedures during the exercise, and/or exhibit obvious learning. Here again, the assumption of excellent working relationships and effective performance will be helpful.

An Observer, Not an Evaluator

ACCES is designed to answer difficult questions about the processes and effectiveness of complex decision processes. Observation is the initial process of capturing information. After data reduction, analysis, and review, this information is capable of answering questions and generating insights of value to military professionals. ACCES observation is not an evaluation process, nor are observers necessarily qualified to evaluate the staffs they see. Certainly they cannot do so based on the unprocessed information or in the absence of the data being collected elsewhere during the exercise. Excellent observers are aware of the limits of their information while on site and behave accordingly. They defer comments on performance until after analysis is completed. In addition, they:

- refer requests for information to senior ACCES team members
- do not tell the staff or commanders how they (the observer) would prefer to see things done or how they would operate; and
- do not discuss exercise performance where the participant can hear them.

There are professional officers whose job is to critique exercise performance based on approved tactics, procedures, and doctrine. They are field evaluators; ACCES observers are not.

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

Lesson Plan

Analysis Fundamentals: The Analysis Process

POI FILE: 3A

Analysis Fundamentals: The Analysis Process

General

This lesson provides the analyst with an overview of the total ACCES application from the analyst's viewpoint. It illustrates the role of the analyst from planning to reporting. The purpose of the lesson is to improve the quality of the data and to orient the analyst toward successful completion of his or her tasks.

Time for completion: 30 minutes

Enabling Learning Objective: 3A

Task: Understand the total range of responsibility carried out by the analyst to produce high quality data and reports.

Condition: Given an overview of ACCES and the Analyst Guide

Standard: Analysts will be able to discuss their role in any given phase of ACCES application.

Presentation Guide

Introduction

Attention. At conclusion of most major field training exercises, the toughest part of the analyst's job is still ahead. *(Display VGT 3A-1-Headliner)* The first step in making this job easier and producing meaningful feedback is to start with good planning. Analysis starts well before the exercise ends. This lesson discusses how to make the job easier and of the product of higher quality.

Motivation. When any part of the ACCES application is not properly planned and executed, it is the analysts who pay the biggest price.

Development

The purpose of this instruction is to develop your understanding of the analysts roles and how you can help to create good quality data to work with. First, let's look at an overall view of the analysis process from the analyst's perspective. *(Display VGT 3A-2-Process Overview) (Instructor should discuss this slide in general. Then continue with an explanation of each area as shown below.)*

Prior Planning and Coordination

General Requirements. The analysis begins before the exercise ever starts, when measures of interest are identified and coordination is done to insure that data to support those measures will be obtained. In addition, the analyst must plan to have control over the data reduction process immediately. The data reduction schedule must be established prior to the exercise. A Chief Analyst or other subject matter expert (SME) must be designated for the role of data reduction facilitator. This person must not have other data reduction responsibilities. The concept of facilitation will be discussed below. The Chief Analyst must coordinate with the ACCES Exercise Controller to insure that adequate facilities are

available for data reduction. The area must have enough work space for all the observers and 3-4 people who may be facilitating and observing this process. Adequate table space and data reduction forms must be provided. The area for data reduction must be quiet enough that a group discussion led by the Chief Analyst can be held. A map with overlays must be available, as well as a flip chart and large paper and markers to construct a timeline during the discussion. Even planning for coffee and donuts can be important. Good data reduction takes up to two days of intensive work by very tired people. They appreciate concern for their comfort.

The analyst should not be solely responsible for prior coordination. A designated Exercise Controller should be available, and the analysts should support and advise the Controller. The Exercise Controller should be an Army officer or NCO if possible. This facilitates coordination of briefings, facilities, travel arrangements, document retrieval, etc. Without coordination and consistent follow-up to carry out actions, many of the exercise data and documents that support calculation of measures will not be collected. The analyst has a great deal to lose by not assisting the planning and coordination.

From the perspective of the analyst, preparation of the physical area for training and data reduction is crucial, as is the need to insure that there is enough time set aside. There may be an Exercise Controller making these arrangements, but if they are not properly carried out, the analyst will suffer the most in the long run. ACCES takes teamwork to accomplish. Everyone must work together to see that all aspects of the application are planned for and under control.

There is no substitute for prior planning and coordination. The analysts cannot overcome poor planning and coordination in their attempts to produce good quality reports. Poor preparation means that the quality of the observations may be poor or unfocused; ground truth, OPFOR intent, and report documentation may be missing; and data reduction sheets may be incomplete or missing. The analysts have a stake in working with the Exercise Controller to support a quality effort.

Data Collection Plan. In the initial steps of an ACCES application, the objectives and scope of the exercise are reviewed to define the focus of the current application. It is important to initiate data collection planning and to balance the desirable (in terms of measures to be employed) with the feasible (in terms of assets available). The data collection plan is the responsibility of the Exercise Controller and the Chief Analyst from the start. In some cases, depending on the availability of personnel, the same person will be given both these roles.

The data collection plan identifies the measures or categories of measures to be collected. Each measure or category implies a certain effort necessary to plan, collect data, analyze, and report. The number and distribution of observers must be geared to support the plan. The requirements for automatic data collection of reports, ground truth data, or other exercise-related information should be planned at this time. Once the data collection plan is finalized, it should be published and distributed to all who

Analysis Fundamentals: The Analysis Process

are involved. The plan will evolve and be annotated as the application matures. Without a good plan the observers will feel overwhelmed and unsure whether they are collecting useful data and the analyst may end up with poor quality data and little or no documentation or ground truth. The plan must support the objectives for the application and focus the whole ACCES team on working together.

Training

The Analyst Program of Instruction (POI) and Observer POI overlap somewhat. The Analyst generally does not need to support the observer training unless specifically designated as an instructor or instructed to attend.

Analysts can improve training by providing insights into what kinds of data are not being collected well, but introducing these insights into ongoing training is not a good idea; it tends to create digressions that are not informative to the observers. Confusion and conflicting advice may be given. Observers are not concerned with each individual measure and will be overwhelmed by analysts' expectations if analysts' comments are not well integrated into the training. Analysts can best support training by identifying where they are not getting sufficient or good quality data. This information should be fed back to the developers for inclusion in the POI.

Observation

Coordination is critical to getting ground truth data. This is obtained during observation, and is usually the responsibility of the observer in the Control cell. This observer should be an analyst. This person should also help collect other reports and Red intent. An analyst may also be asked to play the role of a "rover" who visits the command post (CP) locations to check in with observers and answer questions. An analyst will also sometimes be asked to be an observer in a unit location. If so, this observer should not be the facilitator of the data reduction. An analyst must be available for data reduction facilitation who has mastered an overview of the exercise and will not be filling out data reduction forms.

Data Reduction

Refresher Training. Immediately prior to the data reduction, a brief lesson on data reduction should be taught to refresh everyone's memory on the data sheets and on the reduction process. Misconceptions about the data sheets can be cleared up at this time. The training audience is likely to be more receptive to examining the data sheets after experiencing data collection.

Constructing an Exercise Timeline to Guide Data Reduction. As stated above, the schedule for data reduction, the process, and the facilitation roles must be established prior to the exercise. A Chief Analyst or other subject matter expert (SME) must be designated for the facilitator role during data reduction. This person must not have other data reduction responsibilities. The Chief Analyst must have

control over the data reduction, and this includes facilitation of the timeline creation prior to the observers filling out any data reduction forms.

What do we mean by "facilitating" the timeline construction? The facilitator acts as moderator and elicitor, prompting the data collectors and helping them to construct a chronology of the significant events of the exercise (primarily decisions and events that trigger decisions). Facilitating the timeline takes one to two hours and is a critical foundation for the analysis. The facilitator must have an understanding of the battle flow. The facilitator also acts as a "recorder" or has someone else draw the timeline as the discussion is going on. Ground truth, OPFOR intent, and documentation (reports, orders, etc.) must be available. The observers must be comfortable and ready with their notes. They must understand the timeline construction process. The recorder needs a flip chart, markers, and masking tape to construct the timeline. A map with the relevant exercise overlay(s) should be available and in plain view. It is a good idea to have another analyst present to take notes of important non-timeline issues if the facilitator is serving as a recorder. A pre-meeting among a sub-group of the team who might be the most informed can help set the stage for the discussion. Simply setting the stage with these items and taking five minutes to explain the process to the observers will make the data reduction and analysis of a much higher quality.

When the stage is set, how does the facilitator proceed? A facilitator controls the dialogue during a discussion of the battle flow. Usually the group discussion will start slowly and the facilitator will need to prime the group with a lot of questions. The observers need to be "coached" in their role so they know how to participate in the discussion. The facilitator should give the group time to warm up.

How much should the facilitator prompt observers? He should start with very small chunks of time and proceed from the beginning to the end of the exercise. He ought to begin at STARTEX and ask "what was the first significant event?" After receiving a response he asks "Has anybody got anything before that?" He should get observers involved in timeline construction right away. He ought not tell them what happened, but ask them. Early on he should make it clear to them that he isn't going to do the work for them. He should continue to question the observers as he draws the timeline with events, decisions, etc. Decisions should be located on the timeline, and the discussion back-tracked to the stimulus, which should then be put on the timeline. It's important for a recorder to draw the timeline so that the observers can see it; recorders sometimes make mistakes or timelines need to be edited, and this way the observers can catch errors in the timeline early. OPFOR intent and ground truth can supplement the discussion. The facilitator can call on specific observation nodes as needed to get the full picture.

The facilitator can give examples of ACCES concepts by saying "That's important, that's a good example of..." and so forth. He must use the correct ACCES terms and use them repeatedly as he keeps

the discussion moving. He should tell the observers when to annotate their notes and flag who ought to talk to whom during data reduction as the timeline is produced. As the timeline nears completion, the analyst taking notes should get more detail on stimuli and decisions. He should make also a running list of decisions.

The analysts must take time during the data reduction phase to ask observers what they think they were seeing and why, to help build insights for the report. They should try to draw insights out of observers at different points during the timeline discussion, and ask them questions to verify insights you are developing. Probes should be specific, with questions that use the observers' familiarity with people and events to ascertain the origin of events or actions. Facilitation means to make a process smoother and more effective. This takes practice.

Quality Control of Data Reduction Sheets. After construction of the timeline, two analysts should be available to answer questions. The facilitator should specifically instruct the observers to ask these analysts if they have problems during reduction. Problems solved should be announced to group if there is a teaching point. Rules for consistency within this data set are established. If observers don't come to the analysts, the analysts should go to them. The Control cell observer should be free to support data collector reduction. Analysts update the timeline as new information emerges during reduction. As the observers glean data from their notes during reduction, they should mark items as SA (situation assessment) or D (decision), etc. This will help the analysts if they need to go through the notes again later.

Towards end of day one, the analysts should begin quality control. Quality monitoring starts as an informal, quick shuffle through completed forms looking for blanks and obvious problems. The analysts start with decision sheets and begin checking them for incomplete and ambiguous information. They flag this information and return sheets for correction or completion. Questionable/incomplete items should be marked in yellow. If they are corrected, mark them in green. If they cannot be corrected, mark them in red. This will help to compile statistics later as to what data items were most difficult to complete. Quality control continues through the data sheets by type.

The second quality check is when sheets are handed in for final review. During final review, the observers fill out any evaluation sheets that are required. The second, more in-depth, look is to make sure that actions and events have been coded accurately. Are all items coded as decisions really decisions? Are all items coded as situation assessments really situation assessments? Some simple scoring may be done directly on data reduction sheets during reduction.

After data reduction, the analysts pack the data so that the organization of documents, notes, and forms during data reduction is not lost. There are usually some security procedures to be gone through. Prior planning should have included checking for post office locations and hours and locations where

data can be held on a military facility if needed. The Chief Analyst labels the documents and deals with security marking. The piles of data and documents usually include any and all exercise documentation, observer journals and related data forms (each location's grouped together), and the timeline and analyst notes; these go in the box last. Label the military documents box, the observer box, etc. Have courier letters ready or go immediately to the post office.

Analysis

Formal analysis begins once the data is at the analysts' home location and is unpacked. There are two distinct aspects of analysis. One is tabulation; the other is a process of integrating the data across forms to tell a story to which the measures relate. A more detailed description of analysis is provided below in the Chapter on analysis. The most important aspect of analysis is that it is not a solitary or a mechanical task. Although there are mechanical activities involved in tabulating data and computing scores, the real job of analysis is to identify the story of the exercise and support it with the data. This requires insight by the analysts and an ability to draw inferences from the data. It also requires discussion with other analysts and with observers when available.

Reporting

Reporting includes producing a formal final report and may require an initial briefing of insights and a final briefing. Reporting always includes a responsibility to maintain a neat, well-organized audit trail for future analysts and researchers. This final phase of the application is covered in more detail in the "Reporting" section.

Method

Lecture.

Conclusion

Final Summary. Analysts must actively ensure that data quality is sufficient for the quantity and quality of findings to be provided. (*Display VGT 3A-3--Key Roles of Analysts*) Quality assurance throughout the ACCES implementation will minimize the risks to validity posed by unreliable, incomplete, or inconsistent data.

Remotivation. (*Display VGT 3A-4-- Key Points*) The analysts are at the "top of the food chain" in an ACCES application. They must ensure that they influence the entire process and participate actively in difficult roles (such as observer in the simulation center) to insure decent data analysis when everyone else has gone home.

Closure. Know who is in charge. Ask questions. Discuss the process, the data, and the exercise to arrive at a good quality ACCES application.

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

Lesson Plan

Data Collection Fundamentals: Data Reduction
(Transfer from Journals to Reduction Forms)

POI File: 2C

General

The lesson will provide the observer with an understanding of, and practice in, the skills needed to properly integrate and transfer the data elements from a chronological journal, exercise documents, and other sources to data reduction forms. This lesson will provide the observer with an opportunity to practice transferring some of the data elements, and an understanding of how the analyst and observers must work together.

Time for completion: 90 minutes.

Enabling Learning Objectives: 2B, 2C

Task A: Understand the role of the timeline in the data reduction process.

Condition: Given examples of timeline elements in class.

Standard: Observers and analysts will be able to identify timeline elements.

Task B: Understand the data integration from documents, journals and the timeline and the transfer of information to the data reduction forms.

Condition: Given familiarity with the schemata of measures; given proficiency in recognizing the documents and events; and given walk-throughs of selected data reduction forms.

Standard: Observers will each be able to identify the source and type of data for completing selected data reduction forms.

Presentation Guide

Introduction

Attention. This lesson teaches you to accurately and completely record the data of interest in an exercise onto data reduction forms (Display VGT No. 2C-1-Headliner). There are two sources of data in an exercise: (a) exercise generated documents or other physical records and (b) events which you observe. You must first know how to recognize the documents and the events of importance in a training exercise. Then, you must be able to select the data of interest and record that data in a chronologically ordered journal. Following these collection activities, data reduction will take place once at the end of the exercise. At that time, the data reduction forms will be completed. This lesson focuses on the use of a timeline and the use of journal entries and exercise documents to fill out the data reduction forms.

Motivation. If you do not fill out the data reduction forms completely, the analysts will have to take extra steps. If you fill out the forms inaccurately or inconsistently, you may produce conclusions that mislead the unit which is training or that lead to mistaken recommendations in the case of exercises for testing purposes.

Development

Description of the Data Reduction Process

Data reduction is a process by which observers transfer journal and other data to data reduction sheets (*Display VGT No. 2C-2--Data Reduction Process*). During reduction, we are trying to reconstruct the decisions made over time. The analysts participate in the data reduction process, which takes place almost immediately following the exercise. Before data reduction, there will be a brief refresher lesson on filling out the data reduction sheets. Following the lesson, the observers and analysts will work together to establish an exercise timeline from start to finish. Observers from all locations must contribute to a group discussion while one team member records events over time. Analysts will prompt the observers with questions that help flesh out the timeline.

After the timeline is reviewed by all observers, observers are grouped by CP and begin to fill out the data reduction forms. Journals, exercise documents, and conference with other team members will be needed to fill out data reduction forms. Completed data sheets are reviewed and checked for missing or incomplete information. The data reduction phase requires the integration of documents and journals and the integration of data from more than one observer.

Timeline

The timeline provides an overall picture of the exercise (*Display VGT No. 2C-3--Generic Timeline*). It is a compilation of all the events linked together that occur at individual CPs. It provides a reference for filling out the data reduction sheets. This slide indicates some of the generic elements of a timeline. The elements on the line represent situations being perceived; reports and orders being sent, received, and perceived; and actions being initiated and completed. The elements in brackets can be calculated after the timeline is constructed.

The next timeline (*Display VGT No. 2C-4--Timeline/Chronology for an Attack Decision*) illustrates how part of an actual timeline might look in an exercise situation. This portion of the timeline is very detailed and covers the span of time where a decision to attack was the primary focus. It includes battlefield events, reports, and communication between the G2 and G3.

Review of the Collection Schemata

(Display VGT No. 2C-5--Measurement Categories)

It is important that you have the seven categories of measures in mind as you collect data in your journal and as you prepare to fill out the data reduction forms. Let's review some selected measures in the seven categories to be sure you understand what the data elements mean and what the sources of data are.

These slides show you the data that are needed to support the ACCES measures of the command and control performance of a unit. The data elements are grouped into seven categories to make them easier to use and understand. The categories are:

1. General Measures (G)
2. Incoming Information Handling Measures (IH)
3. Situation Assessment Measures (SA)
4. Course of Action Analysis Measures (CA)
5. Preparation of Directive Measures (PD)
6. Outgoing Information Handling Measures (O), and
7. Information Exchange Measures (IE).

There are also two categories of control measures: Decision Control and Exercise Control. These address characteristics of decisions and of the exercise as a whole, rather than measuring the qualities of specific processes.

(Display VGT No. 2C-6 through 2C-13--ACCES Measures Data Collection Schematics)
(Instructor should briefly review data elements from each of the seven categories as he/she goes through the slides.)

The General Measures are divided into four areas. The schematic for G shows various data elements needed to compute the measures. Some are clear cut, such as number of directives issued at your location or number of plans produced. A plan is defined as containing mission, schedules, assets, boundaries, and task organization. A plan may be sent out without a directive to implement. A directive is a verbal or written communication to a subordinate to take action, to implement a plan or part of a plan.

The Information Handling Measures (Incoming and Outgoing) look at the punctuality and accuracy of reports. ACCES looks at (friendly) operations reports, Intelligence Summaries (INTSUMs), spot reports (about the enemy), and weather and terrain Reports. We want to know not only what elements the reports contain, but the nature of those elements, any queries, time received, and time sent. It is important to find out any SOP reporting times for your assigned area and where you can see reports received.

The Situation Assessment Measures have to do with how the unit is maintaining their knowledge of the situation. The unit may issue a formal (comprehensive) situation report or briefing or they may informally discuss the situation. An important element of recording situation assessment is noting which elements of the situation are discussed each time a situation assessment is made. These may be elements of the friendly or enemy situation. The elements of interest are shown on the slide.

The Course of Action Analysis Measures look at, for example, what elements are considered when COAs are discussed. The COA elements considered can include: enemy reaction, mission accomplishment, friendly residual capacity, and enemy residual capacity.

Preparation of Directives Measures are supported by data elements about preparing plans or directives. Remember all plans include some one or more of the elements: mission, task organization

Data Collection Fundamentals: Data Reduction

(assets), schedules, and boundaries. A directive (verbal or in a written form) tells a subordinate to take action. An example of a data element is the time a directive is received by the area you are observing.

Data to support the Information Exchange Measures are shown on the next slide. There are two kinds of information exchange: coordination and information seeking; and two locations of interest to find it: within a CP and between CPs. The same data elements apply to all. One example is "when did someone in the CP first perceive the need for coordination?" You may hear someone state the need for more information. "We need to talk to the G2 about this..." Sometimes someone from outside the cell or CP calls in for more information. Information Exchange Measures are dependent on recording either someone seeking to share or receive information or someone being asked to share information. The discrimination between coordination and information seeking can be made by examining the context of the information exchange; was it intended to change or affect a situation on the battlefield, or was it an attempt to "pull" information up instead of waiting for units to "push" it?

The ACCES Exercise Controller will normally assemble data to fulfill the Exercise Control Measures as to the context of the exercise, unit's recent combat experience, unit's time in the field, etc. Data for the Decision Control Measures are garnered from observers' notes of the relevant decision briefs, etc.

Each category contains a number of individual data elements. The categories have data reduction sheets for assembling the data for different locations.

Data reduction Forms

There are nine data reduction forms. (*Display VGT No. 2C-14 through 2C-22--Data Collection/Reduction Forms*) We shall look through them briefly then come back to two for more thorough review. (*Instructor should briefly show each data reduction sheet.*) Data reduction sheets are available in the back for review.

Practice

Let's look at one data reduction form, "Situation Assessment." (*Repeat VGT No. 2C-18--Situation Assessment and VGT No. 2C-4--Timeline*) (Two projectors are needed at this time.) First, identify every data reduction form completely, including the time you are referring to. Let's walk through the form and assess the kind of information needed and whether you would find that in your journal (provided as a handout) or elsewhere. To begin this data reduction form, the first entry is the time an assessment was first discussed. In our timeline, we see the activities of the staff as they interact with each other and with subordinate and higher headquarters. The time is 060440. We move down to "situation assessments" and consult our journal to check off what elements of the friendly and enemy forces, weather and terrain were mentioned as this assessment was discussed. Were any other possibilities considered before the decision was made to attack? Was the situation assessment comprehensive or selective? The time period associated with the assessment was approximately three

Data Collection Fundamentals: Data Reduction

hours. The decision time was 060500. Your journal can also provide information on whether the situation was queried and if your journal references any message/document/briefing about the situation.

Let's look at the Course of Action Analysis data reduction form. (Repeat VGT No. 2C-19--COA Analysis) This data reduction form is related to the discussion of COAs you may hear at your location. This data reduction form is usually entirely dependent on your journal. Journal notes can help you find the times when COAs were discussed during the exercise at your location. Enter the number of COAs and a brief description of each. Sometimes a COA is mentioned but not evaluated. How many were really evaluated? When was the evaluation complete? Note in your journal if a COA is associated with a specific period of time in the future. Your journal should contain notes on the Courses of Action elements.

Method

Lecture/group discussion.

Materials familiarization.

Group practice with feedback.

Conclusion

Summary. This lesson introduced you to the data reduction forms and provided some practice. You should look over all the data reduction forms and become familiar with them.

Remotivation. The real assessment of how well you are maintaining your journal comes when you sit down to transfer the appropriate data elements to observation forms. The critical need is for the analyst to have complete data to work with. You are supporting someone who has to brief a unit on how they have performed, or who has to make recommendations about new equipment or procedures, so it is essential to provide them with complete and detailed information.

Closure. Data reduction will be reviewed again immediately before the data reduction process begins. Now that you are familiar with data reduction, we will review strategies for effective collection in the next lesson.

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

Lesson Plan

Analysis Fundamentals: Data Analysis

POI File: 3C

General

The purpose of this instruction is to introduce the knowledge and skills required by an ACCES analyst and to provide guided practice of the skills needed to perform analysis using ACCES reduced data.

Time for completion: 30 minutes

Enabling Learning Objective:- 3F

Task A: Organize data for analysis.

Condition: Given the ACCES scoring procedures and the Analyst Guide.

Standard: Analysts will be able to organize and summarize the data and point out relationships between C² processes and performance outcomes.

Presentation Guide

Introduction

Attention. Analysts provide a vital link in the performance feedback system. (*Display VGT No. 3C-1-Headliner*) They interact with observers to translate data into conclusions. Their products must faithfully represent the process performance. This instruction will illustrate how to perform the steps needed to make the data useful to training audiences.

Motivation. The culmination of the ACCES implementation requires expert skill and judgment in order to produce quality feedback. Our job today is to provide you an opportunity to develop proficiency as ACCES analysts.

Development

ACCES has been implemented in various settings. (*Display VGT No. 3C-2-Analytic Qualities*) We have identified a number of qualities which we believe produce effective ACCES analysts. Let's list some of their distinguishing characteristics:

- They operate with a mental framework of data collection and its use.
- They possess a knowledge and understanding of ACCES measures.
- They possess first-hand knowledge of the exercise or training event. (Comprehend all aspects of the unit's mission, its organization, and its actions to achieve specific training outcomes.)
- They understand the data collection task, conditions and standards which must be met in order to produce reliable findings from the measurements.

This instruction will facilitate your development of those skills an analyst must master in order to prepare meaningful feedback on command and control effectiveness. (Display VGT No. 3C-3--Purpose) Specifically, the analyst must be able to:

- Evaluate the quality of data
- Discriminate what data are needed and usable
- Assess the completeness of data provided by observers
- Maintain databases
- Request additional information needed to complete or clarify inputs from the observers
- Summarize data
- Compute scores
- Analyze data and information to formulate conclusions about performance
- Present and display findings
- Provide feedback in reports and briefings

We intend to use the time available to provide guided practice and demonstrations of how to perform each of these skills. In order to proceed, we must begin with the critical prerequisite knowledge.

Let's build a common framework for the flow of data collection and its use.

Data Collection

(Display VGT No. 3C-4--Framework)

Purpose of data collection. It is important that the analyst appreciate why the data were collected. Data may be collected to provide diagnostic feedback to the unit. It may also provide insights of a systemic nature that benefit the Army in general. Clearly, when an analyst receives data he must know how the results will be used.

Measures defined. Each measure is made up of data elements which are collected and scored using a procedure. While objective data are sought, we must often rely on the judgment of observers. Useful measurements are obtained when the procedures provide reliable results among observers, over time and across settings.

Collection plans. Each exercise provides a unique training setting where data can be collected. The ACCES team must formulate and implement a collection strategy so that the relevant data are collected. There must be an understanding of what data are to be collected, where it is available and how it will be reported. Collection plans alone are insufficient. Successful implementation of the methodology requires preparation (purpose) and team building (training and practice).

Data Collected. The data which are collected must be processed to be useful to the analyst. Raw data which the observers collect in the field are processed by extracting data from collection journals.

Observers score the data using approved procedures and rules. Analysts use the scored data to perform the analysis needed to achieve the purpose.

The analyst's job is to transform the reduced data into meaningful conclusions and feedback about Command and Control Effectiveness. Reduced data must be verified for completeness. This requires that the scored data be examined for gaps or inconsistencies. Analysts will review scoring sheets with the observer(s). It is at this time that analysts seek clarification or additional data needed to perform assessments.

Calculations are simple and straightforward: trust me. You won't have to memorize formulas or be a mathematician. What is required is a basic ability to organize and summarize data. Through practice and experience you will develop insights needed to efficiently perform calculations needed to support analysis.

The simplest form of analysis is summarizing data. The typical means used to summarize data are shown on this slide. (*Display VGT No. 3C-5--Summary Statistics*) Summary data allows one to draw conclusions about the quality, completeness and usefulness of data.

Summary statistics:

- Distributions (provide a means for describing the frequency with which events occur)
- Mean, Median (provide a measure of central tendency for the data in the distribution)
- Range, Standard Deviation, Variance (provide an estimate of variation within the distribution)
- Correlations (describe relationships between variables)
- Reliability (provides a measure of the consistency of the collected data)

Let's examine the ACCES measures and determine what categories or classes of measures we must master. Turn to page SA-3 of the Measure Definitions and let's identify the characteristics of SA 2.1, the Assessments of Enemy Situation measure.

This measure consists of the quantity of situation assessments dealing with enemy forces, their activities , and intentions, made over a given period of time (an exercise day, an exercise, etc.). The data must be collected in the training environment; the nature of the assessment process is such that it is unlikely that exercise documents will contain sufficient information to glean this data afterwards.

First there are descriptive items which help us to establish the correct time and space relationships of this information in relation to our full data set. The datum required is a simple yes or no which the observer would record in his journal. During the data reduction phase, this observation would be transferred to a scoring sheet and accumulated by date, staff section and node.

As the ACCES analyst, you would review each data sheet and organize them chronologically. Analysts must integrate information from several sources to develop an understanding of what happened,

to determine what performances took place, and to assess why deviations from standard occurred. In other words, the analyst is trying to establish cause-and-effect relationships using the available data.

One way to approach understanding cause and effect is to define variables and analyze their correlations. We consider dependent variables (performance outcomes), independent variables (C2 process), and control variables (constants for a given exercise). ACCES is designed to provide reliable data that will enable the analyst to formulate hypotheses about the unit's performance. And, because there are ACCES data available from other exercises, comparisons across exercises may be possible.

As analysts we deal with three types of variables. (*Display VGT No. 3C-17--Types of Variables*) We are interested in determining the effect of actions or processes on outcome or effectiveness. When we can identify them, we try to control conditions that could have an impact on the outcome. These are the types of variables that will always influence our analytic approach. If we look upon ACCES as a source of dependent variables, and the command and control process as the independent variable, we can formulate statements about command and control issues. Here are some examples.

Information Handling. Summarize the extent to which the flow of information was sustained and uninterrupted. Analysis issue: is the information provided in standard reports updated? To what extent is information available to support the planning and decision processes? Is the quality of plans affected by the availability of current information about friendly units?

Situation Assessment. (*Display VGT No. 3C-18--C2 Issues for Analysis*) Consider the extent to which the battlefield picture at different nodes was the same. Analysis issue: did the type of automated systems available affect the congruence of information which was available and therefore used to make decisions and to plan operations? How does the performance of this unit compare to similar units? If there is a deficiency, why did it occur; is it related to the day of the exercise, mission, SOP, training?

Course of Action Analysis. Determine the extent to which the staff produces complete courses of action. Analysis Issue: How does the number of participants affect the ability of the staff to formulate courses of action? What elements of the COA are omitted (if any)? Why did omissions occur (information accuracy or completeness, participation, commander's guidance)? What is the relationship between the unit information-processing system and the quality of COA prediction? To what extent are COA analyses related to external information flow? How does quality of COA analysis affect plan quality?

Preparation of Directives. Evaluate the process of converting the results of the planning and decision process into implementing directives. Analysis Issues: To what extent does centralized planning produce directives that accurately convey decisions and guidance related to staff section participation? Are directive preparation and processing times significantly different between types of units or echelons of

command? How can this be explained? To what extent do directives correlate with the elements of the decision? Does the median time that a directive is effective vary with type of mission? In what way? On average, how much lead time is generated through the issuance of a Warning Order? Do subordinate units have sufficient time to implement directives? Is this consistent by unit or echelon? Why are there differences? What proportion of the Planning and Decision Cycle is consumed by Directive Preparation?

Method

Lecture and guided practice.

Conclusion

Final Summary. (*Display VGT No. 3C-19--Summary*) Analysis is the process of drawing tentative conclusions from a set of data. The data flow produced by an ACCES application must be reduced by observers and subjected to analysis before it can be used as performance feedback. The analysis takes place subsequent to the exercise and is the basis for the final written report and briefing. Analysis requires an ability to discriminate among data to identify what are relevant and usable, and to organize and summarize data for presentation.

Remotivation. Analysis is the culmination of the ACCES methodology. High quality analysis will uncover the underlying trends and provide the insights that describe unit strengths and weaknesses.

Closure. With these skills fresh in mind, let's practice with ACCES observers so you can experience firsthand the type of interactions necessary to produce meaningful performance feedback from ACCES measurements.

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

Lesson Plan

Analysis Fundamentals: Integrating Analysis

POI File: 3D

General

This lesson provides the analyst with the issues and methods of integrating the data; that is, taking it beyond the purely mechanical scoring procedures.

Time for completion: 45 minutes

Enabling Learning Objectives: 3A, 3B, 3D

Task: Understand the organization, verification, and integration principles of working with an ACCES application data set.

Condition: Given an overview of ACCES and the Analyst Guide

Standard: Analysts will be able to explain the need for data integration and compare and contrast it to a purely mechanical approach to scoring ACCES data.

Presentation Guide

Introduction

Attention. (*Display VGT 3D-1--Headliner Slide*) There is a difference between counting data items and scoring the measures. Although some aspects of the process seem mechanical, the analytical procedure is an attempt to see what happened during the exercise by reviewing the events and refining the exercise timeline at the same time data are integrated and scored.

Motivation. Analysts will find themselves unable to generate meaningful narrative for a report if they do not follow some simple principles and methods for data integration that help one to understand and elucidate the story of the exercise.

Development

(Display VGT 3D-2--Rules for Decisions)

Integration actually begins as soon as the analysts and observers begin to compare insights in data reduction. It continues at the home location of the analysts when they begin to review the timeline. They revisit all events scored as decisions and may delete some at this point. Not everything that looks like a decision to an observer matches the relevant ACCES definition. Some non-decisions may have slipped through the quality control procedure. If any decision description seems questionable to the analysts, they should reexamine it.

Two or three analysts should decide together if a decision should be deleted. The number of decisions must be stable over the analysis. Once the set of decisions is determined, list them separately, i.e., decision by location, type, and time, as a job aid to use during analysis.

Analysis needs to go beyond the calculation and comparison of scores, for two reasons: *(Display VGT 3D-3—Same as text below)*

- The objectives of the application are unlikely to be stated in terms of these scores, but will address broader questions;
- Few readers of the analysis will know what to make of a set of numerical scores without some interpretation in everyday language relating the scores to command performance.

Consequently, both observers and analysts should be looking for insights into the meaning of what they see, and these insights should be recorded, organized, and reported as part of the analysis and reporting process. Experience has shown that the compilation of insights is most productive when conducted immediately after data reduction and concurrently with the calculation of scores.

Sometimes the scores are inconsistent with what the analysts saw on the exercise. When the data are inconsistent with perceptions, analysts should either trust that the data are meaningful or say why they think they are not. For example, artificialities in the exercise may have severely impacted certain measures.

(Display VGT 3D-4—Discussion Format)

In determining the story of the exercise, analysts review the scores for each day after scoring is complete. When possible, they reassemble observers and review the scores after analysis. If this is not possible, they use the two-to-three-person analyst team. They review the higher levels of measure categories first, and then review again at the lower level of the measures looking for specific problem areas. (For example, what were the monitoring problems?) They look for connections. The analysts should have kept notes as scoring proceeded to track insights, (such as, "3d Brigade never understood the situation."). These can now be expanded. The analysis team takes the scoring sheet and uses butcher paper or viewgraphs to discuss the scores.

They then assemble a basic briefing slide. The group fills in the blank bullets with phrases that explain the scores. They answer the questions together: "What does this mean?" "What do we want to say to the unit about the different organizational elements?" They may use the last bullet to relate this measure to another measure.

Insights typically come to observers as they witness the staff in operation. Even though the observer's prime objective is the collection of data, a good observer is one who thoroughly understands the process he is observing and what it is trying to accomplish. Such an observer is usually able to develop insights into causes, effects, and relationships that may or may not be reflected in the eventual scores.

Integrating Analysis

Insights can and should be refined by discussions among observers and analysts. When finally reported, they should be stated in terms that address the objectives of the application. Those objectives should be the primary guide to any search for meaning in whatever appears in the calculated scores or the observed performance. They also may provide a useful structure for organizing and reporting insights. More often, the insights will be organized according to the measure used.

It is important that in developing and reporting insights analysts should:

(Display VGT 3D-5--Key Points)

- Never guess. They must not report a trend, insight, or finding without supporting data even if they strongly believe it.
- Feel free to make inferences as long as they indicate the basis of the inference.
- Discuss these inferences with the other analyst(s).
- Keep a log of accepted inferences and record why they were accepted.
- Overcome their reluctance to infer at all. Tables of numbers don't mean much to most people. They need to hear the story of what happened.

Method

Lecture

Conclusion

Final Summary. You now have three methods to generate insights that will help you integrate the data. (Display VGT 3D-6--Three Methods)

Remotivation. Using this approach increases the quality of your job and makes it easier.

Closure. Work with other analysts and with observers to see that insights are generated and verified.

Analyst Training
for the
Army Command and Control Evaluation System

Lesson Plan

Analysis Fundamentals: Reporting

POI File: 3E

General

This lesson provides the analyst with an understanding of reporting requirements and a discussion of some of the reporting issues.

Time for completion: 45 minutes

Enabling Learning Objectives: 4A, 4B, 4C

Task: Understand the total range of information needed in a high quality report and the type of reporting that may be required (briefings, quick insights, final report).

Condition: Given an overview of ACCES and the Analyst Guide

Standard: Analysts will be able to discuss the reporting responsibilities.

Presentation Guide

Introduction

Attention. (*Display VGT 3E-1--Headliner*) The Final Report is the culmination of the application. It should provide an accurate and clear picture of what happened during the application, and of how the evaluation was conducted. It also should contain sufficient supporting data to back up all statements made in the written text. Try to convey the concept of what we measured, the conceptual model and the key questions in the report.

Motivation. While this sounds clear cut, it can be extremely difficult to prepare a report without some idea of a set format and focus on a report purpose.

Development

The Final Report and any other reporting on the application should be oriented toward the purposes of the current ACCES application. Use this focus as the starting point for identifying your reading audience and focusing your report. As stated in Chapter 1, there are six major arenas where ACCES can be used. They are: (*Display VGT 3E-2--Six Arenas*)

- To build command and control databases,
- To provide exercise feedback,
- To provide training evaluation and development,
- To evaluate equipment use,
- To conduct C2 experiments, and
- To support simulation development.

(*Display 3E-3--General Points*)

Generally a report must be clear and easy to read, i.e., accessible to a wide audience. Report in succinct, common language. Support statements with data. Use standard formats for the front-end to describe ACCES and the exercise. After this introductory, context-setting material, present the overall effectiveness, the General Measures first, then the diagnostics of all the various categories and measures. The use of examples and graphics makes the report easier to assimilate for the reader. People will remember a sketch or example more easily than text or tables of numbers.

Format of the Final Report

(Display VGT 3E-4—Report Format)

Executive Summary. The Executive Summary is written last and is critical. Some people who pick up the report may read only the Executive Summary. It is critical that the nature of the ACCES methodology, the story of the exercise, and key insights and findings are reflected in a summary that is easy to read, clear, and concise. If you wish to influence a trainer, a commander, a researcher, or other potential reader, write an Executive Summary that conveys the nature and importance of this information. Write it last after you have the story of the exercise and the key insights firmly in your mind and have discussed them with others for clarity and accuracy.

The Executive Summary is written for interested personnel who do not wish to study the entire report. This summary should contain every important point made in the report's main body, but be brief. Begin with an introductory paragraph describing the purpose of the report and the principles involved with its development. Another paragraph should cover any unique features of the application and its relationship to other applications. These two paragraphs provide a perspective for the remaining part of the summary. Areas of importance are the strengths, weaknesses, and trends observed. The insights emphasized in the summary should be tailored to the purpose of the report as they may influence decisions in training, procedures, organization, database, doctrine, or materiel development.

Overview of ACCES. An example of an overview of ACCES is shown in Chapter 1 above, in the Analyst POI, and in past reports. Some overview of ACCES is needed in the report, as not every reader will be familiar with ACCES. A set description should be developed for all reports and then revised only if the methodology is revised. Refer to the Appendices of the report that show the measures and data sheets. A unique subsection should be created that addresses the data collection plan for that application and its execution. This subsection should address in general terms the measures used for the application. It should discuss who the observers were and where they were placed. Any problems encountered in relation to observation (such as certain types of data that could not be obtained) should be explained.

Exercise Overview. The Exercise Control measures contain a number of descriptors of the exercise environment. Many of these are of special interest to database developers and researchers identifying trends. These measures should be reported in this overview section. This section should also briefly describe the application objectives, the exercise scenario, the tactical command structure, the actual commands involved in the exercise, and any unique features that distinguish this exercise from previous ones.

In describing the flow of the exercise, it is helpful to report a list of decisions and describe generally what went on during the exercise. This sets up the report by describing how the action unfolded. The reader can then compare measures reported with the flow of the exercise. Separate chronologies of decisions may need to be presented for significant sections of the exercise (such as brigade battles, transitioning between offensive to defensive operations, etc.).

Reporting Measures. Results are reported in tables for each measure within a measurement category. An objective discussion that is narrative in nature should be provided for each measure and should explain the relevance of scores. Possible reasons for high and low scores should be included in the discussion of each measure.

Report the measures in an order that supports the story of the exercise. Build a story with the data. Report the overall effectiveness measures, the General Measures first. Sum up the General measures before going on. Use short examples in the narrative whenever possible. Discuss each category of measures, the scores, and related events, employing the story of the exercise to link the category discussions. For example, one could start with the Decision Control Measures, then discuss how the decisions were supported by discussing the Information Handling and Exchange events and measures that provide a basis for the decision. One would follow with Situation Assessment Measures to show how the information was then used to assess the situation. Then a discussion of consequent COA analyses and the Course of Action measures and Preparation of Directives measures. Don't just report scores. Remember that all the scores take place in a context and are interrelated. Help the reader by providing examples to illustrate weak or excellent performance and draw the relationships that seem to hold among the measures. For example, if a unit's assessments of the situation are routinely incorrect, this should show up in their inability to prepare successful plans. Provide as much explanation for C² performance as is reasonable and back up the explanations with references to data.

Insights. The scores themselves can be a source of insights. Unusually low scores may be indicative of specific problems, and the data collection process permits analysts to trace such scores to their source. Unusually high scores may be a clue to conditions that permit the most effective staff performance. Finally, more complex patterns in the scores can tell the analyst and the command something about

performance. This is especially true of trends over time. Day-to-day variations in the scores can reveal learning effects, strengths and weaknesses in training, and the effects of strong or weak procedures. Variations from application to application have reflected changes in staff organization and the effects of workload, unit experience, and participation by senior officers.

Briefing Preparation in Conjunction with Final Report. An application briefing may be required. It should be prepared in conjunction with the application report and should contain sufficient information and supporting data to provide a clear understanding of C2 performance.

A suggested briefing format is as follows:

- Objectives
 - A reiteration of objectives as set forth in the data collection plan.
 - Command and control evaluation objectives.
- The Exercise
 - Tactical organization- An organizational hierarchy chart listing the tactical organization of the unit matched with the actual command involved in the exercise.
 - Those aspects of the application that set it apart from others (if any).
- Review of the Methodology - A review of the ACCES model and the measures used for this application.
- Exercise Limitations - Exercise artificialities and their impact on C2 evaluation.
- Insights - Insights with supporting scores taken directly from the final report.
- Comparison Between Applications - Trends and patterns supported by a comparison of scores with past applications.
- Overall Conclusions - Lessons learned from insight and appropriate recommendations.

Appendices and Documentation Trails. Each Final Report should be a complete package. We do not know who may at some time pick up a report and read it. Make each report free standing. You do this by including the overview of the exercise, the overview of ACCES, identification of the report such as the date, and at least two appendices -- the current measures and the current data reduction sheets. In addition, maintain a file or notebook that contains the exercise documentation clearly labeled, including the scoring matrix, and all backup documentation generated.

Method

Lecture

Conclusion

Final Summary. Reporting must be done with a purpose and the wide audience in mind. Insights and discussion are a key to building a good report as is a set format.

Remotivation. Keep your report and all supporting data organized. The next person who has to use your report and find the supporting data will appreciate it, and it may be you.

Closure. (*Display VGT 3E-5--Typical Patterns.*) The most powerful tool you have to help you construct a good report is your ability to develop insights, trends and relationships in the data set. Experience over applications will develop this skill. Similar patterns will emerge across data sets.

Analyst Training
for the
Army Command and Control Evaluation System (ACCES)

View Graphs

What Is ACCES ?

Terminology

Analysis: The act of manipulating, comparing, and correlating data to derive conclusions.

Application: The procedure by which ACCES data is collected, reduced and analyzed during and subsequent to an exercise.

C2 Document: A written or computer-based product of a C2 event.

C2 Evaluation: The judgement, based on measures and data, of C2-process-quality.

C2 Performance: The overall C2 effectiveness of a headquarters.

Coding: The transfer of raw data onto data sheets.

Computation: The assignment of numbers to objects or events according to a set of rules; the transformation of reduced data into measures.

Data: The discrete elements extracted from document(s) or observed event(s) that are used to describe performance.

Terminology (Continued)

Data Collection: The act of recognizing the important data elements of an event or document and recording them by time and location.

Data Reduction: The act of transforming data from raw notes or coded forms into reduced data usable in computation.

Document: A written or computer-based product of a C2 event.

DTG: The Date-Time Group. A six-digit identifier of day (first two digits) and military time (last four digits), e.g. "120400".

Effectiveness: The ability of the unit to achieve the desired effect of an activity.

Environment: The physical and conceptual battlefield surroundings in which a CP operates.

Event: An observable occurrence that is discrete in terms of time and place.

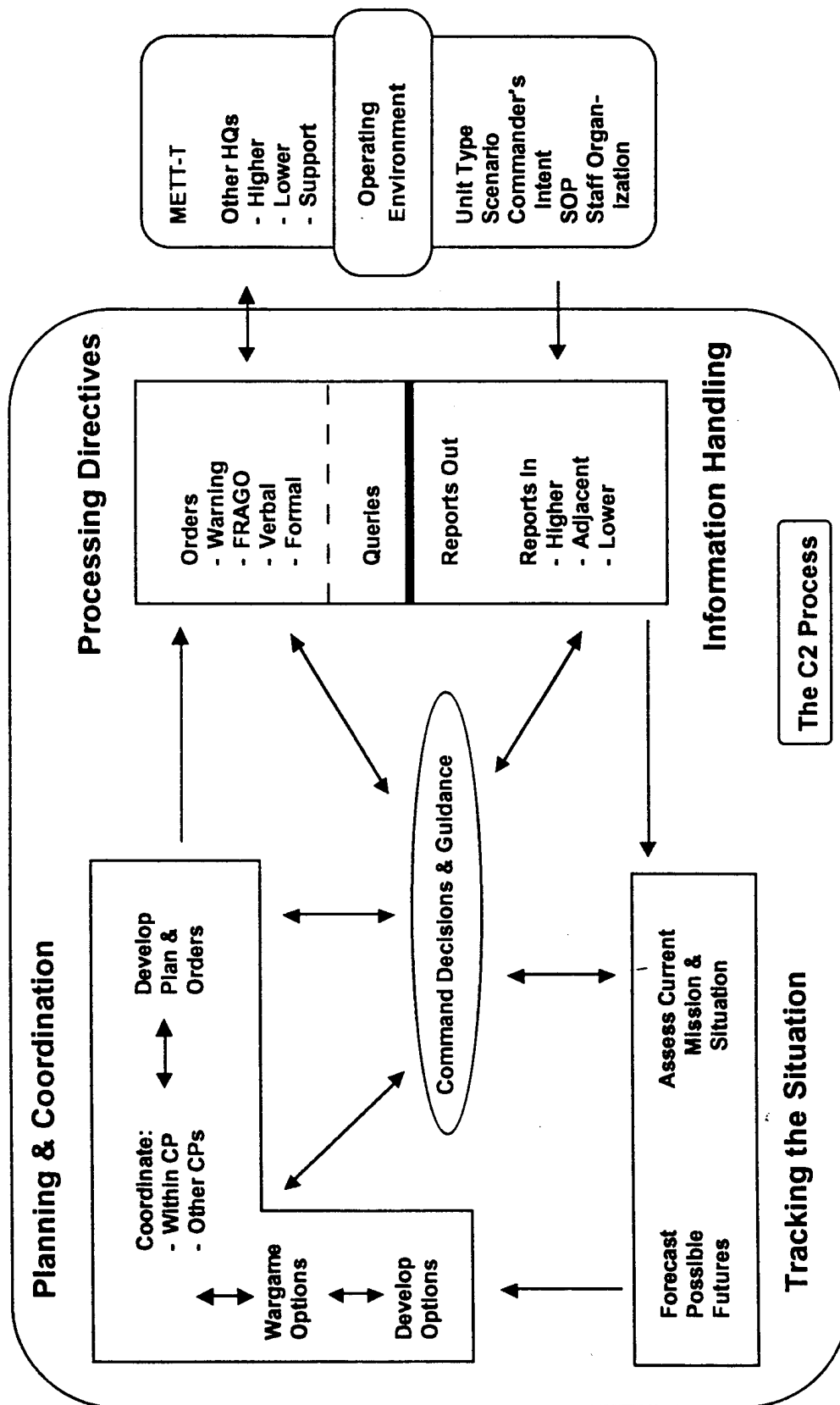
Plan: The means by which a headquarters structures its attempts to change or influence the battlefield environment.

Reliability: The consistency of the data collection process.

Quantitative: Summary of performance by the assignment of numerical values.

Qualitative: Summary of performance by the assignment of characteristics or attributes.

ACCES Command and Control Model



Goals

- **Provide Performance Measurement to the Unit.**
- **Identify "Cause-and-Effect" Relationships.**
- **Provide Systemic Feedback to the Army.**

Preparation

- **Review Exercise Objectives.**
- **Compile Data Collection Plan.**
- **Select Data Collectors.**
- **Brief Staffs.**
- **Publish Data Collection Plan.**

Collection & Reduction

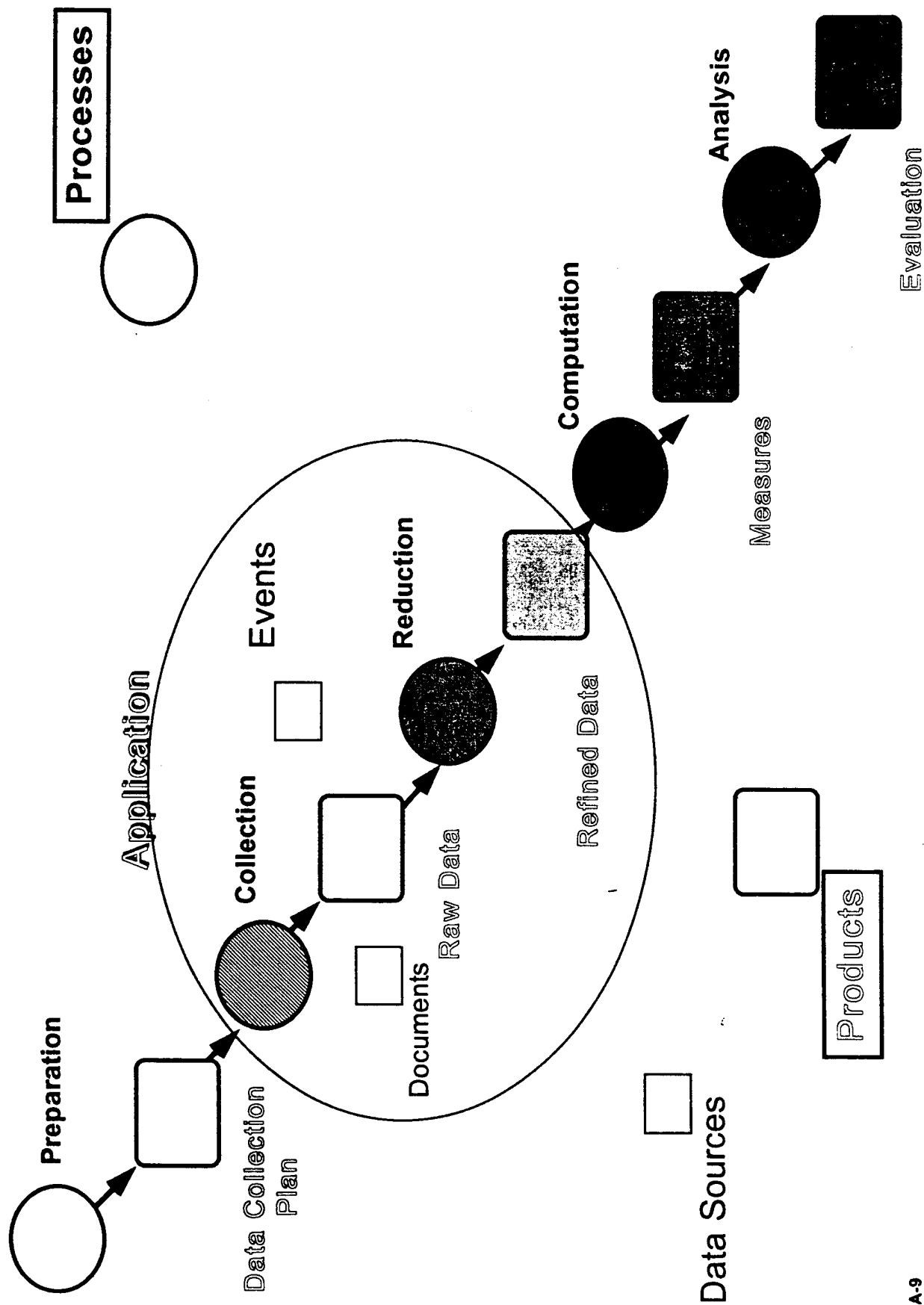
- **Data Collector Training.**
- **Data Collection During Exercise.**
- **Review and Consolidation of Data.**
- **Data Reduction.**

Analysis

Analysts Must:

- **Compute Scores,**
- **Develop Insights and Conclusions,**
- **Prepare Results.**

ACCES Data Flow



INFORMATION HANDLING MEASURES (IH) ACCES 93:

Observer: _____ Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Report Is: Incoming ☐ To: _____

Outgoing ☐ From: _____

SITREP ☐

INTSUM ☐

Operation Report ☐

Spot Report ☐

Warning Order/Directive ☐

Weather And Terrain Report ☐

Brief description of contents: _____

Time report is due (scheduled reports only): _____

Time report/warning order/directive is received (all incoming)/sent (all outgoing): _____

Time report/warning order/directive is perceived (all incoming): _____

Medium of transmission:

FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

If a report, mark all elements addressed:
Provide element details where available.

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

If a report is queried, mark all elements queried:
If report queried, by whom? _____

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

Source of data in report: _____

Other related data sheets _____

1A-10

INFORMATION EXCHANGE MEASURES (IE) ACCES 93:

Observer: _____ Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

This exchange represents: Coordination ☐ Information Seeking ☐

This exchange took place: Within a CP ☐ Between CPs ☐

Time that need for exchange was perceived: _____

Describe the issue or action: _____

This exchange dealt with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

Exchange requested by: _____

Request initiated by: Request sent to: Time initiated: Time response received: Exchange made via:

[Possible means of exchange include: FM, MSE/field 'phone, Fax, Courier, MCS, Face to face.]

Other Related Data Sheets _____

1A-11

SITUATION ASSESSMENT MEASURES (SA) ACCES 93:

Observer: _____

Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of situation assessment: Comprehensive ☐ Selective ☐

Briefly describe the assessment: _____

Time assessment expressed: _____ By whom? _____

Reason for assessment: _____

Assessment dealt with:

Friendly Force:

- ☐ Mission
- ☐ Task Organization
- ☐ Disposition
- ☐ Activity
- ☐ Status
- ☐ Support

Enemy Force:

- ☐ Composition
- ☐ Disposition
- ☐ Combat Power
- ☐ Activity
- ☐ Capabilities

This assessment covered the current and expected situation up to time: _____

This assessment contributed to a decision at time: _____

Were other futures considered possible? Yes ☐ No ☐ How Many?: _____

Other possibilities were: _____

Other related data sheets: _____

Analyst Use Only

Assessment was: Correct ☐ Incorrect ☐

1A-12

COURSE OF ACTION MEASURES (COA) ACCES 93:

Observer: _____ Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Staff:

Number of staff members involved in COA analysis: _____

Number of staff sections involved in COA analysis: _____

Courses Of Action:

COAs considered:
(Draw arrow by # of COA recommended)
(Circle # of COA selected)

	Prediction of Enemy Reaction	Number of Enemy Reactions	Likelihood of Mission Accomplishment	Residual Friendly Capacity at Completion	Residual Enemy Capacity at Completion	Time COA Completed	End of Period COA Covers
1. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
2. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
3. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
4. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
5. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
6. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
7. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
8. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Number of other COAs articulated
but not seriously considered: _____

Other Related Data Sheets: _____

1A-13

DECISION CONTEXT MEASURES (DC) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Stimulus for decision: _____

Time stimulus perceived at CP: _____

What was the decision? _____

What time was the decision made? _____

What officer made the decision?

Commander ☐

Assistant Division Commander ☐

Chief of Staff or Executive Officer ☐

G-1/S-1 ☐ G-2/S-2 ☐ G-3/S-3 ☐ G-4/S-4 ☐

Subordinate in commander's name ☐

Other _____ Unknown ☐

What unit(s) were affected? _____

What elements did the decision concern?

Mission ☐ Task Organization ☐ Schedule ☐ Boundaries ☐

Other _____ Unknown ☐

Identification of directive: _____

Type of operation (as per attached list): _____

Was a contingency activated? Yes ☐ No ☐

If Yes, title or other ID of the contingency: _____

Other related data sheets: _____

1A-14

PREPARATION OF DIRECTIVES MEASURES (PD) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐

DMAIN ☐

DREAR ☐

Brigade _____

Current Ops ☐

Plans ☐

Command ☐

Intelligence ☐

CSS ☐

Fire Support ☐

Special Staff ☐

Type of directive: Warning Order ☐ FRAGO ☐ Other ☐ (Specify Type) _____

The order/directive changed or established:

Missions ☐

Task Organization ☐

Schedules ☐

Boundaries ☐

The order/directive deals with:

Personnel ☐

Intelligence ☐

Operations ☐

Logistics ☐

DESCRIBE the context and content: _____

Which (if any) earlier decision and/or plan was this directive based on? _____

If not based on earlier decision and/or plan, who made the decision, and under what circumstances? _____

of staff members participating in directive preparation: _____ # of staff sections represented: _____

Time directive preparation started at this CP: _____

Time directive preparation stopped at this CP: _____

Total prep. time: _____

Time directive issued: _____

Time directive received by subordinate commands (separate times by commas): _____

Medium of transmission: FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

Did directive require clarification? Yes ☐ No ☐

From whom, and why? _____

Was directive event-driven? Yes ☐ No ☐ By what? _____

Time first element supposed to be initiated: _____

Time expected to be fully completed: _____

Total time span: _____

Other related data sheets: _____

Analyst Use Only

Time stimulus perceived at CP: _____

Was directive consistent with the decision? Yes ☐ No ☐

If not, which elements were inconsistent?

Missions ☐

Task Organization ☐

Schedules ☐

Boundaries ☐

If issued by an alternate CP, does directive conflict with one from the primary CP? Yes ☐ No ☐

Summary

- **ACCES: a process-measurement tool used to assess command and control effectiveness in Army HQs.**
- **ACCES applications produce both quantitative and qualitative results.**
- **ACCES results depend on reliable collection, reduction, and analysis of data.**
- **ACCES must look at the whole of C2 to derive a credible and accurate assessment.**

ROLES AND RESPONSIBILITIES

Characteristics of an Ideal Observer

- **Prepared**
- **Persistent**
- **Polite**
- **Alert**
- **Unobtrusive**
- **Efficient**
- **Security-Conscious**
- **Professional**
- **Consistent**
- **Team Member**
- **Positive**
- **Non-judgmental, not an evaluator**

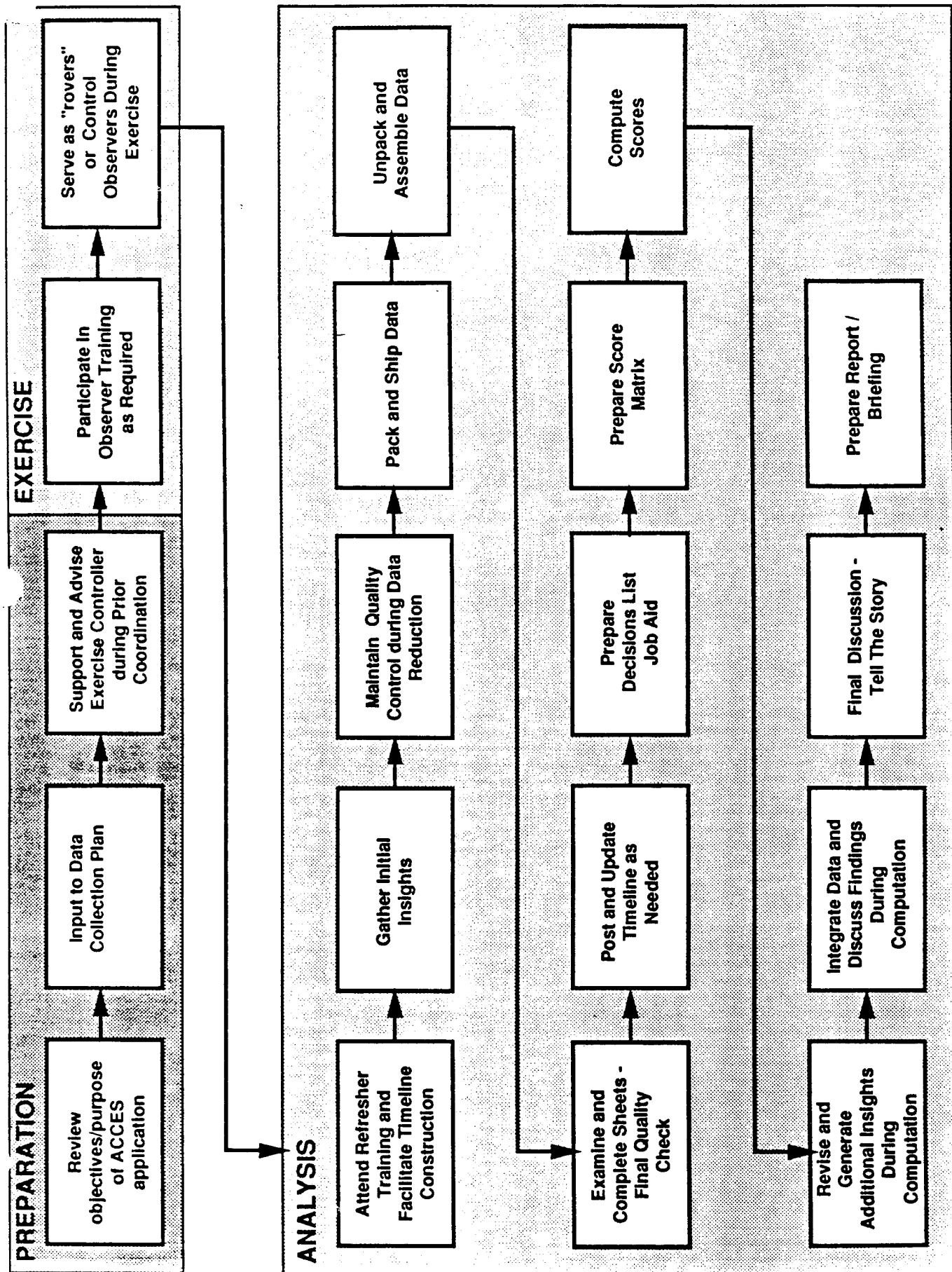
Five Basic ACCES Team Responsibilities

- Recognition
- Recording
- Data Reduction
- Analysis
- Reporting

Additional Responsibilities

- Shift Handover
- Security
- Teamwork
- Pre-Exercise Knowledge
- Confidentiality

THE ANALYSIS PROCESS



Key roles of the analyst

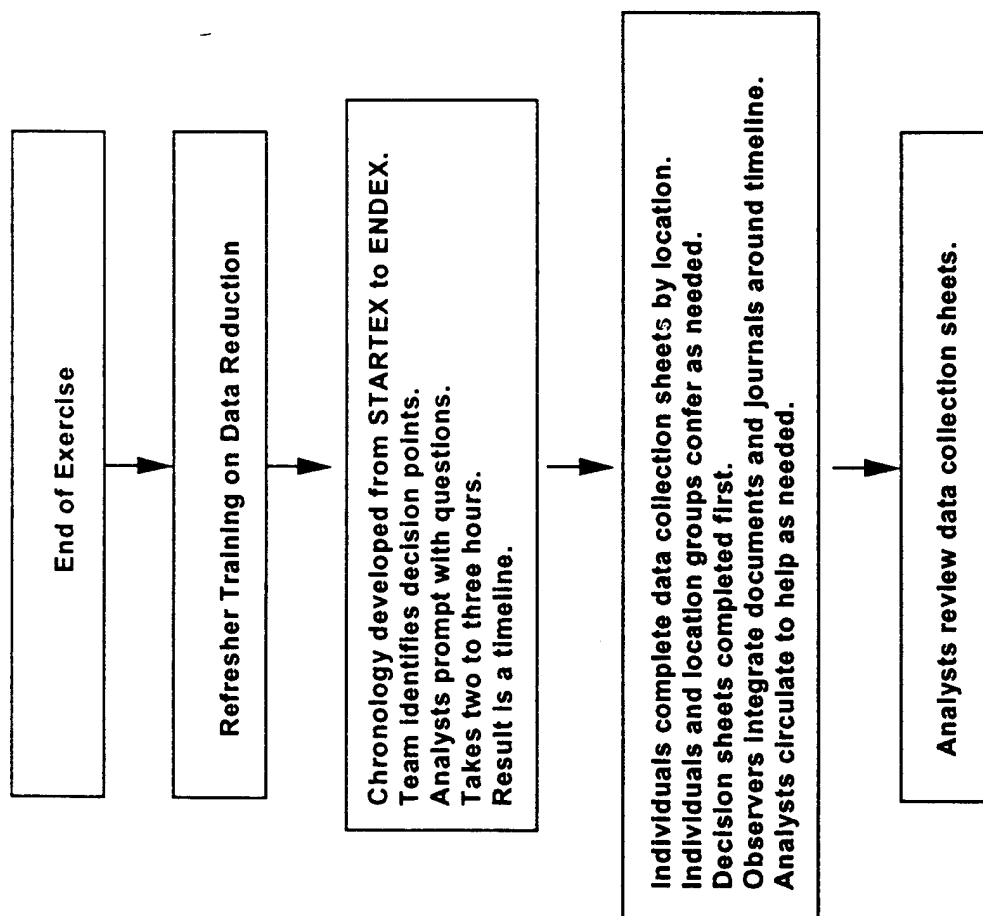
- The analyst must insure that ground truth is gathered during the exercise including documentation from control and *enemy intent*.
- During data reduction, the analyst must perform quality control of the data.
- The analyst must document the analysis and preserve the data in a way that provides a consistent audit trail over time. Without this preservation, resources are wasted over time and trends cannot be established.

Key points which cause analysis to be more difficult than necessary or to be less fruitful:

- **Not having a data collection plan**
- **Use of non-military professionals as observers**
- **Spending less than two days on observer training**
- **The instructor not preparing for training**
- **Allowing less than two days for data reduction and not facilitating the timeline construction at the start**

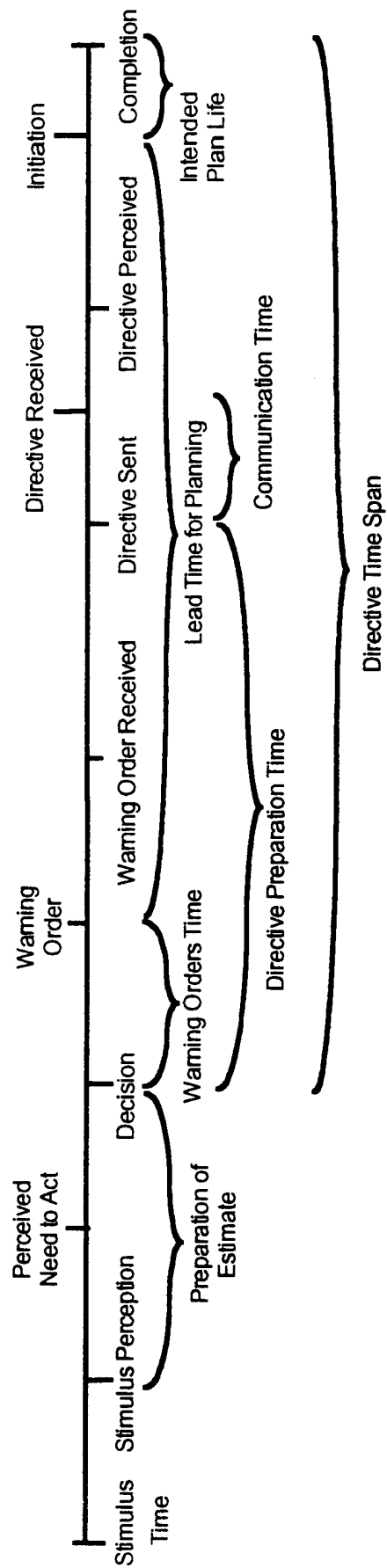
DATA REDUCTION PROCESS

Data Reduction Process

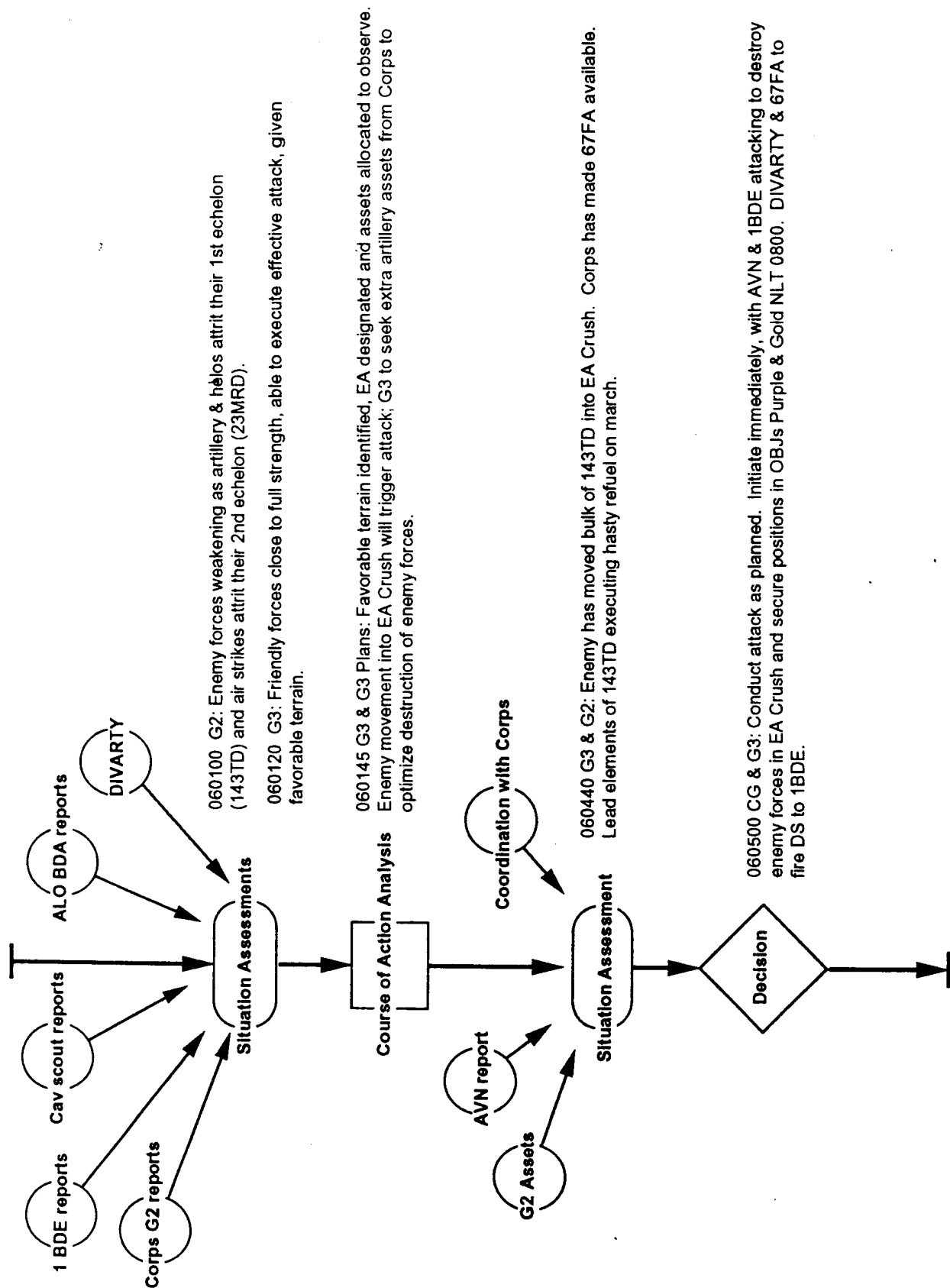


Generic Timeline

Decision Cycle Event



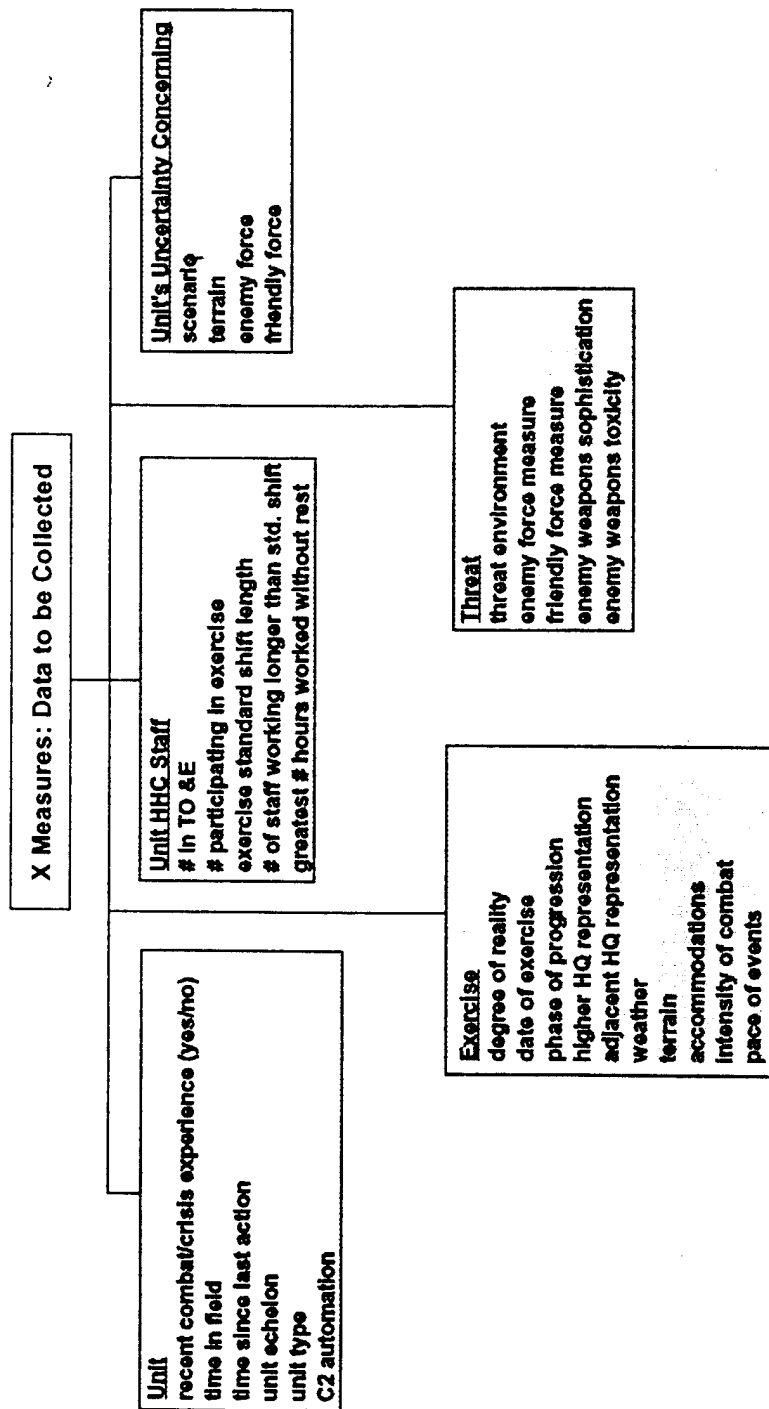
Timeline/Chronology for an Attack Decision



Measurement Categories

- 1. General Measures (G)**
 - 2. Incoming Information Handling Measures (I)**
 - 3. Situation Assessment (SA)**
 - 4. Course of Action Analysis (CA)**
 - 5. Preparation of Directive Measures (PD)**
 - 6. Outgoing Information Handling (O)**
 - 7. Information Exchange (IE)**
- Decision Control Measures (DC)**
- Exercise Control Measures (X)**

ACCES MEASURES DATA COLLECTION SCHEMATA



Note: throughout, those areas marked in grey represent data not normally available to ACCES observers in the field or in a single location and that must therefore be collected by analysts.

G Measures: Data to be Collected

Impact on Planning

total # changes to plan
 # changes not attributable to incoming info. handling process failure
 # changes not attributable to situation analysis process failure
 # changes not attributable to COA analysis process failure
 # changes not attributable to directive preparation process failure
 # changes not attributable to information exchange process failure
 # changes not attributable to outgoing info. handling process failure

Directives

directives
 # proactive directives
 # contingent directives

Time

time plan implemented
 time plan ends
 time mission assignments established
 time mission assignments change
 time task organization established
 time task organization changed
 time schedule established
 time schedule changed
 time boundaries established
 time boundaries changed
 time plan is expected to be initiated
 time plan is expected to be fully completed
 time planning stimulus is perceived
 time directive is issued

Plans

plan elements completed within original contingencies
 total # plan elements
 # plans
 # dominant plans
 # adaptive plans

I Measures: Data to be Collected

SITREPs

total # received
time due
time received
received late

SITREP Elements

total # elements reported
total # non-location elements reported correctly
units identified
units correctly identified
of unit IDs queried
unit capabilities reported
unit capabilities correctly reported
unit capabilities queried
unit activities reported
unit activities correctly reported
unit activities queried
locations reported
ground truth unit locations
total # elements queried

INTSUMs

total # received
time due
time received
received late

INTSUM Elements

total # elements reported
total # non-location elements reported correctly
units identified
units correctly identified
of unit IDs queried
unit capabilities reported
unit capabilities correctly reported
unit capabilities queried
unit activities reported
unit activities correctly reported
unit activities queried
locations reported
ground truth unit locations
total # elements queried

Spot Reports

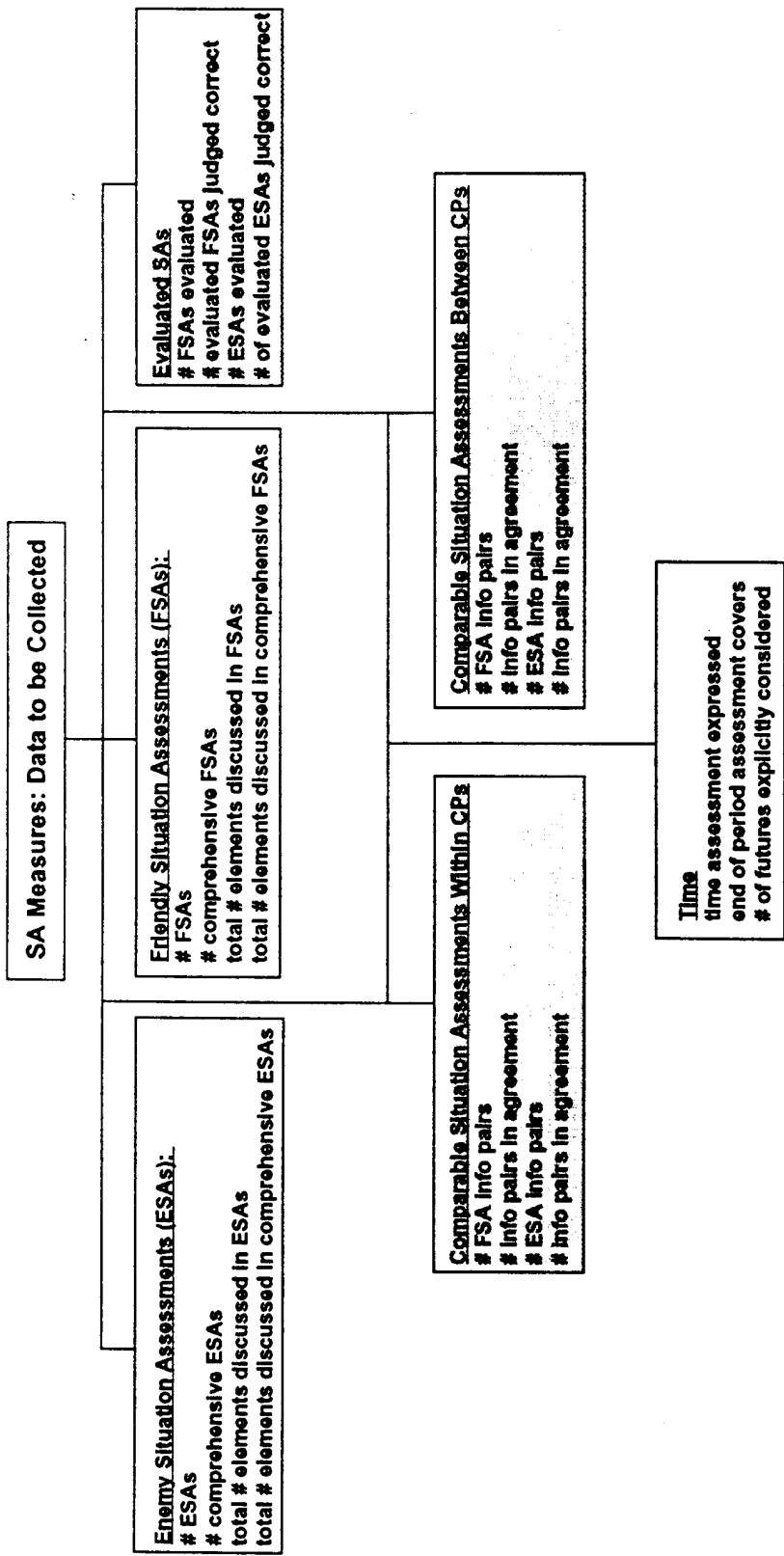
of reports
of reports queried
total # elements reported
total # elements correctly reported
units identified
units correctly identified
unit capabilities reported
unit capabilities correctly reported
unit combat activities reported
unit combat activities correctly reported
location reported
ground truth unit location

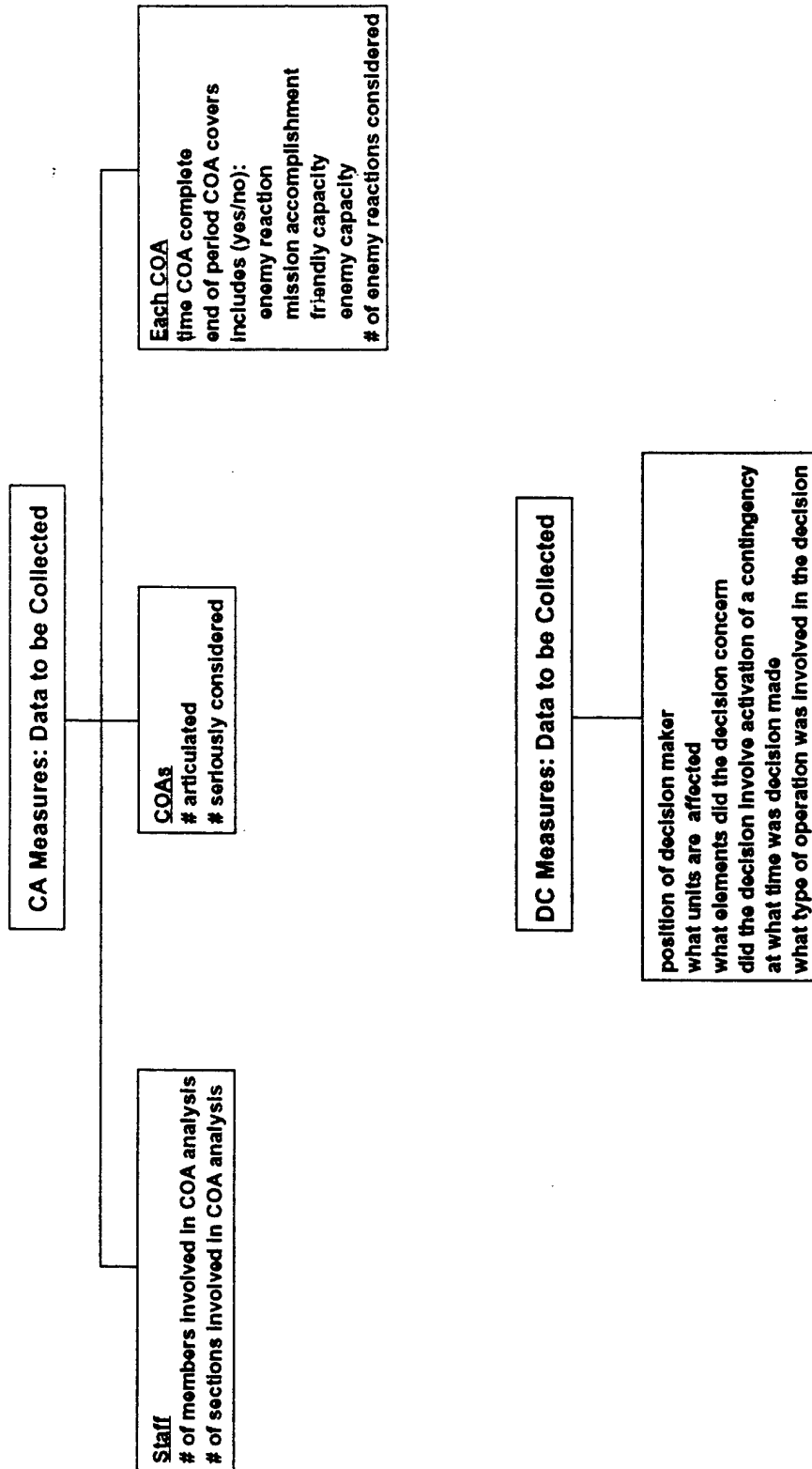
Weather & Terrain Report

elements reported
elements correctly reported

Operations Reports

of reports
of reports queried
total # elements reported
total # elements correctly reported
units identified
units correctly identified
unit capabilities reported
unit capabilities correctly reported
unit combat activities reported
unit combat activities correctly reported
location reported
ground truth unit location





PD Measures: Data to be Collected

Staff

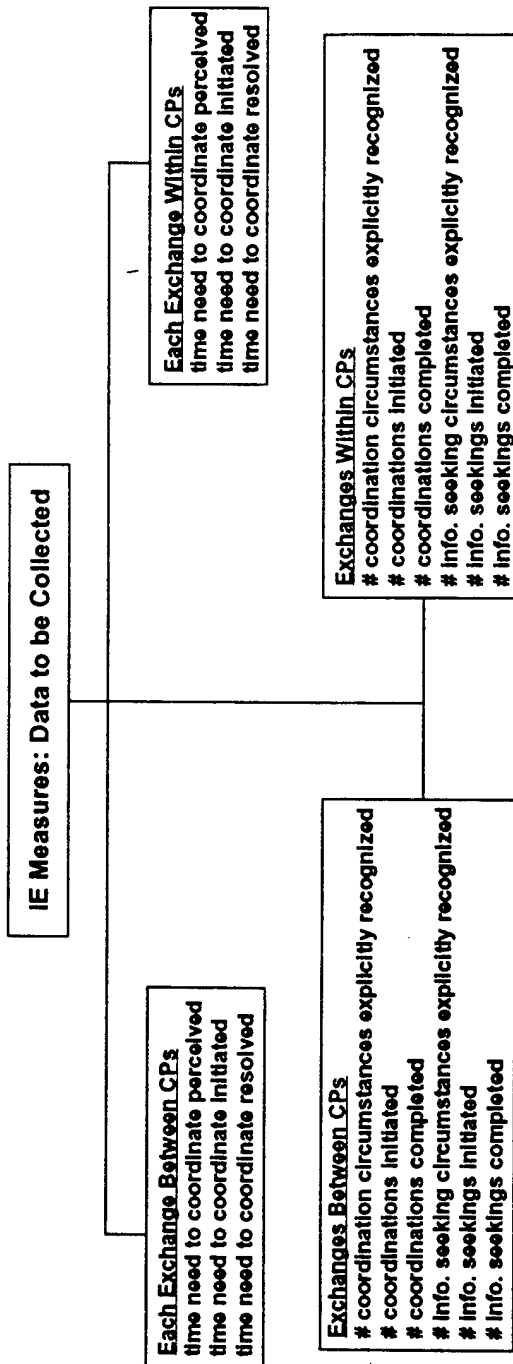
- # of members involved in planning
- # of sections involved in planning

Each Directive

- # elements
- # elements consistent with commander's intent
- was directive event-driven
- time of perception of stimulus for action
- time of directive decision
- time work ceases on warning order
- time work ceases on directive
- time first element supposed to be initiated
- time all elements of directive expected to be fully completed
- time warning order received by commands (each)
- time directive received by commands (each)

Total Directives

- # directives
- # requiring clarification
- # issued by alternate CPs
- # non-conflicting issued by alternate CPs



O Measures: Data to be Collected

SITREPs
total # sent
time due
time sent
sent late

SITREP Elements
total # elements reported
total # non-location elements reported correctly
units identified
units correctly identified
of unit IDs queried
unit capabilities reported
unit capabilities correctly reported
unit capabilities queried
unit activities reported
unit activities correctly reported
unit activities queried
locations reported
ground truth unit locations
total # elements queried

INTSUMs
total # sent
time due
time sent
sent late

INTSUM Elements
total # elements reported
total # non-location elements reported correctly
units identified
units correctly identified
of unit IDs queried
unit capabilities reported
unit capabilities correctly reported
unit capabilities queried
unit activities reported
unit activities correctly reported
unit activities queried
locations reported
ground truth unit locations
total # elements queried

Spot Reports
of reports
of reports queried
total # elements reported
total # elements correctly reported
units identified
units correctly identified
unit capabilities reported
unit capabilities correctly reported
unit combat activities reported
unit combat activities correctly reported
location reported
ground truth unit location

Operations Reports
of reports
of reports queried
total # elements reported
total # elements correctly reported
units identified
units correctly identified
unit capabilities reported
unit capabilities correctly reported
unit combat activities reported
unit combat activities correctly reported
location reported
ground truth unit location

OBSERVER JOURNALObserver: _____ DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____ Date-time-group _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

[illegible]

GENERAL MEASURES (G) ACCES 93:

Plan ID: _____

Directive ID: _____

Planning CP: _____

Prior Plan Success: Dominant ☐

This Cycle Stress: Low ☐

Adaptive ☐Moderate ☐

Unsuccessful ☐

High ☐

Plan Initiative: Proactive

Contingent ☐Reactive ☐

Time Stimulus for Plan Perceived: _____

Time Directive Implementing Plan Issued: _____

Therefore: Planning Cycle Time: _____

Time First Element Supposed to be Initiated: _____

Time Plan Expected to be Fully Completed: _____

Therefore: Intended Plan Life: _____

Time Implemented: _____

Time Ended: _____

Therefore: Plan Duration: _____

Mission **Implemented** _____ **Changed** _____

Task Organization **Implemented** _____ **Changed** _____

Schedule **Implemented** _____ **Changed** _____

Boundaries **Implemented** _____ **Changed** _____

of Plan Elements Surviving: _____

This Plan's Success: Dominant ☐ Adaptive ☐ Unsuccessful ☐

Did a C2 Failure Cause the Plan to End ? Yes ☐ No ☐

If so, a Failure in What Area?: _____

INFORMATION HANDLING MEASURES (IH) ACCES 93:

Observer: _____ Date-time-group: _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Report Is: ²² Incoming ☐ To: _____

Outgoing ☐ From: _____

SITREP ☐ INTSUM ☐

Operation Report ☐ Spot Report ☐

Warning Order/Directive ☐ Weather And Terrain Report ☐

Brief description of contents: _____

Time report is due (scheduled reports only): _____

Time report/warning order/directive is received (all incoming)/sent (all outgoing): _____

Time report/warning order/directive is perceived (all incoming): _____

Medium of transmission:

FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

If a report, mark all elements addressed:
Provide element details where available.

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

If a report is queried, mark all elements queried:
If report queried, by whom? _____

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

Source of data in report: _____

Other related data sheets _____

2C-16

INFORMATION EXCHANGE MEASURES (IE) ACCESS 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

This exchange represents: Coordination ☐ Information Seeking ☐

This exchange took place: Within a CP ☐ Between CPs ☐

Time that need for exchange was perceived: _____

Describe the issue or action: _____

This exchange dealt with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

Exchange requested by: _____

Request initiated by: Request sent to: Time initiated: Time response received: Exchange made via:

[Possible means of exchange include: FM, MSE/field 'phone, Fax, Courier, MCS, Face to face.]

Other Related Data Sheets _____

2C-17

SITUATION ASSESSMENT MEASURES (SA) ACCESS 93:

Observer: _____

Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of situation assessment: Comprehensive ☐ Selective ☐

Briefly describe the assessment: _____

Time assessment expressed: _____ By whom? _____

Reason for assessment: _____

Assessment dealt with:

Friendly Force:

- ☐ Mission
- ☐ Task Organization
- ☐ Disposition
- ☐ Activity
- ☐ Status
- ☐ Support

Enemy Force:

- ☐ Composition
- ☐ Disposition
- ☐ Combat Power
- ☐ Activity
- ☐ Capabilities

This assessment covered the current and expected situation up to time: _____

This assessment contributed to a decision at time: _____

Were other futures considered possible? Yes ☐ No ☐ How Many?: _____

Other possibilities were: _____

Other related data sheets: _____

Analyst Use Only

Assessment was: Correct ☐ Incorrect ☐

COURSE OF ACTION MEASURES (COA) ACCES 93:

Observer: _____ Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Staff:

Number of staff members involved in COA analysis: _____

Number of staff sections involved in COA analysis: _____

Courses Of Action:

COAs considered:
(Draw arrow by # of COA recommended)
(Circle # of COA selected)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Prediction of Enemy Reaction	Number of Enemy Reactions	Likelihood of Mission Accomplishment	Residual Friendly Capacity at Completion	Residual Enemy Capacity at Completion	Time COA Completed	End of Period COA Covers
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Number of other COAs articulated but not seriously considered: _____

Other Related Data Sheets: _____

2C-19

DECISION CONTEXT MEASURES (DC) ACCESS 93:

Observer: _____

Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Stimulus for decision: _____

Time stimulus perceived at CP: _____

What was the decision? _____

What time was the decision made? _____

What officer made the decision?

Commander ☐

Assistant Division Commander ☐

Chief of Staff or Executive Officer ☐

G-1/S-1 ☐ G-2/S-2 ☐ G-3/S-3 ☐ G-4/S-4 ☐

Subordinate in commander's name ☐

Other _____ Unknown ☐

What unit(s) were affected? _____

What elements did the decision concern?

Mission ☐ Task Organization ☐ Schedule ☐ Boundaries ☐

Other _____ Unknown ☐

Identification of directive: _____

Type of operation (as per attached list): _____

Was a contingency activated? Yes ☐ No ☐

If Yes, title or other ID of the contingency: _____

Other related data sheets: _____

2C-20

Operations (from FM 100-5)

Offense: Movement to Contact
Hasty Attack
Deliberate Attack
Exploitation & Pursuit
Special Purpose Ops

(Reconnaissance in force, spoiling/counterattacks,
feints/demonstrations, offensive reliefs, raids.)

Defense: Area
Mobile
Security (Screening/Covering)
Reserve Ops
Rear Ops

Retrograde

Support: Indirect Fire Support
Combat Support
Command and Control

PREPARATION OF DIRECTIVES MEASURES (PD) ACCES 93:

Observer: _____ Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of directive: Warning Order ☐ FRAGO ☐ Other ☐ (Specify Type) _____

The order/directive changed or established:

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

The order/directive deals with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

DESCRIBE the context and content: _____

Which (if any) earlier decision and/or plan was this directive based on? _____

If not based on earlier decision and/or plan, who made the decision, and under what circumstances? _____

of staff members participating in directive preparation: _____ # of staff sections represented: _____

Time directive preparation started at this CP: _____

Time directive preparation stopped at this CP: _____

Total prep. time: _____

Time directive issued: _____

Time directive received by subordinate commands (separate times by commas): _____

Medium of transmission: FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

Did directive require clarification? Yes ☐ No ☐

From whom, and why? _____

Was directive event-driven? Yes ☐ No ☐ By what? _____

Time first element supposed to be initiated: _____

Time expected to be fully completed: _____

Total time span: _____

Other related data sheets: _____

Analyst Use Only

Time stimulus perceived at CP: _____

Was directive consistent with the decision? Yes ☐ No ☐

If not, which elements were inconsistent?

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

If issued by an alternate CP, does directive conflict with one from the primary CP? Yes ☐ No ☐

DATA ANALYSIS

Analytic Qualities

- Cognitive map of ACCES.
- Knowledge of measures.
- Construction of patterns.
- Understanding of performance.

Purpose

- **Acquire basic skills:**
 - **Discrimination.**
 - **Calculation.**
 - **Integration.**
- **Construct cognitive map.**

Data Collection Framework

- **Purpose.**
- **Measures.**
- **Collection Plan.**
- **Data types.**

Summary Statistics

- **Distribution.**
- **Mean, Median.**
- **Range, Standard Deviation, Variance.**
- **Correlation.**
- **Reliability.**

Types of Variables

- **Independent.**
- **Dependent.**
- **Control.**

C2 Issues for Analysis

- **Information congruence.**
- **Information handling.**
- **COA prediction.**
- **Preparation of directives.**

Summary

- **What it means to be an analyst:**
 - **Basic analytic skill.**
 - **Integrating analytic skills with data collection.**

INTEGRATING ANALYSIS

Rules for deleting decisions

**Decisions are evaluated in terms of "does it matter to the force?"
Examine the timeline for consequences when in doubt.**

Delete any decision sheets which describe decisions which:

- **are below the level of what matters to this organization.**
- **did not result in a decision cycle**
- **did not generate a new plan.**

Keep decision sheets which meet these criteria:

- **It's a decision if an asset moved.**
- **A choice among options.**
- **Changes in missions, task organization, dispositions, supports, schedules, or boundaries.**
- **Resulted in a directive.**
- **Was significant to the force.**

Analysis needs to go beyond the calculation and comparison of scores, for two reasons:

- **The objectives of the application are unlikely to be stated in terms of these scores, but will address broader questions;**
- **Few readers of the analysis will know what to make of a set of numerical scores without some interpretation in everyday language relating the scores to command performance.**

MEASURE NAME AND NUMBER

Day	1	2	3	4	5	Unit/Comment
1						.
2						.
3						.
4						.
5						.

SCORES
FILLED
IN

• Related measure(s)
Comment

Key points in developing and reporting insights are:

- **Never guess. Don't report something with no data to back it up even if you strongly believe it must have been so.**
- **Make an inference and indicate why.**
- **Anytime an analyst makes an inference, discuss it with the other analyst(s).**
- **Keep a log of inferences and why you decided they were true.**
- **Overcome your reluctance to infer at all. Tables of numbers don't mean much to most people. They need to hear the story of what happened.**

Three methods to generate insights:

- **The observers and analysts who were at the exercise had insights which were captured during the exercise, especially during data reduction.**
- **Each analyst has been generating insights as scoring proceeded and has discussed these insights informally .**
- **After scoring, assemble the analyst team. Don't have analysts work alone. A three-person team is ideal. This team conducts a final session to discuss insights and fill in rough briefing slides which form the basis for the report narrative for each measure and for the insights section.**

REPORTING

The six major arenas where ACCES can be used are:

- to build command and control databases**
- to provide exercise feedback**
- to provide training evaluation and development**
- to evaluate equipment use**
- to conduct C2 experiments**
- to support simulation development.**

GENERAL POINTS

- Report in succinct, common language
- Support statements with data
- Use standard formats for the front-end to describe ACCES and the exercise
- After this introductory, context setting material, present the overall effectiveness, the General Measures first, then the diagnostics of all the various categories and measures
- The use of examples and graphics makes the report easier to use for the reader
- People will remember a sketch or example more easily than text or tables of numbers

FINAL REPORT FORMAT

- The Executive Summary is Written Last and is Critical
- Overview of ACCES
- The Exercise Overview
- Reporting Measures
- Insights
- Appendices
- Documentation Trails

Experience with the methodology to date has produced certain repeated relationships and patterns that aid in developing insights:

- Relationship between cycle times for the three CPs (DMAIN, DTAC, DREAR)
- An increase in the number of plans resulting from major incongruence, combined with a faster pace of battle, indicating a reactive vice proactive mode
- Look for patterns in the types of misunderstandings
- Failure to consistently monitor deep and/or flank activity leading to major incongruences
- Greater that 20% of plans with only a single option is an indication of a tendency toward "brittle" planning

APPENDIX C

ARMY COMMAND AND CONTROL EVALUATION SYSTEM (ACCES)

ANALYST'S GUIDE

This Guide is a supplement to, not a substitute for, participation in the full ACCES Analyst Program of Instruction.

The Pre-Analysis Process

This chapter describes the data collection and reduction process from the analyst's point of view and highlights the analyst's role in that process. The analyst has important tasks throughout the process, not just during actual data analysis after an exercise. These "non-analysis" tasks of the analyst consist of:

- Ensuring that ground truth is gathered during the exercise (including documentation from control and enemy intent),
- Performing quality control of the data during data reduction, and
- Documenting the analysis and preserving the data in a way that provides a consistent audit trail over time. Without this preservation, resources are wasted over time and trends cannot be established.

Prior Planning and Coordination

The analyst's job begins before the exercise starts. Data of interest are identified and coordination is accomplished to ensure that data will be obtained. In addition, the analyst must **plan** to control the data reduction process that occurs immediately after the exercise. The duration of the data reduction session and the analysts and data collectors' roles in the data reduction process must be established before the exercise.

A Chief Analyst or other subject matter expert (SME) must be designated as the "facilitator" of the data reduction. This person must not have other data reduction responsibilities. The topic of facilitation will be discussed in detail in the later section on Data Reduction.

The Chief Analyst must coordinate with the ACCES Exercise Controller to insure that adequate facilities are available for data reduction. The area must have enough work space for all the observers and for those people who will be facilitating and observing this process. Adequate table space and data reduction forms must be provided. The area for data reduction must be quiet enough that a group discussion led by the Chief Analyst can be held. An exercise map with the appropriate overlays must be available, as well as a flip chart and large paper, masking tape, and markers to construct a timeline during the discussion. Even planning for coffee and donuts can be important. Good data reduction takes up to two days of intensive work by very tired people. Support for their comfort is important. From the perspective of the analyst, preparation of the physical area for training and data reduction is crucial, as is the need to insure that there is enough calendar time set aside to accomplish execution. If these arrangements are not properly carried out, the analyst will suffer the most in the long run.

The analysts should not be solely responsible for prior coordination. A designated Exercise Controller should be available, and the analysts should support and advise the Controller. The Exercise Controller should be a military officer if possible. This facilitates coordination of scenario briefings, facilities, travel arrangements, document retrieval, etc. Without coordination and consistent follow-up to carry out actions, many of the

measures will not have sufficient information for calculation. The analyst has much to gain by assisting the planning and coordination and a great deal to lose by not doing so.

Crucial points which cause analysis to be more difficult than necessary or to be unfruitful are:

- Not having a data collection plan,
- Using as observers personnel not familiar with current Army and C3I processes and language,
- Spending less than two days on observer training,
- Not preparing for training,
- Allowing less than two days for data reduction, and
- Not facilitating the timeline construction at the start of data reduction.

There is no substitute for prior planning and coordination. The analysts cannot overcome poor planning and coordination in their attempts to produce good quality reports. Poor preparation means that the quality of the observations may be poor or unfocused; ground truth, enemy intent, and report documentation may be missing; and data reduction sheets may be incomplete or missing.

Data Collection Plan

In the initial stages of an ACCES application, the objectives and scope of the exercise are reviewed to define the focus of the current application. This review is embodied in the data collection plan (a suggested plan format is appended). Data collection planning must balance what is desirable (in terms of measures to be employed) with what is feasible (in terms of assets available). The data collection plan is (again) the responsibility of the Exercise Controller and the Chief Analyst from the start. In some cases, depending on resources, these will be the same person.

The data collection plan identifies the measures to be collected. Each measure implies a certain effort necessary to plan, collect data, analyze, and report. The observers that will be available must be allocated carefully in support of the plan. The needs for automatic data collection of reports of ground truth or other variables should be planned for at this time. Once the data collection plan is completed, it should be published and distributed to all who will be involved. Should necessity require changes to the plan, it should be annotated as the application matures.

Without a good plan training cannot be focused properly, the observers will feel overwhelmed and unsure whether they are collecting useful data, and the analyst may end up with poor quality data, no documentation, or little ground truth. The plan supports the objectives for the application and focuses the whole ACCES team so that they work together.

Training

The Analyst generally does not need to support the observer training unless specifically designated as an

instructor or unless instructed to attend. Analysts can improve training by providing insights into what kinds of data have not been collected well, but introducing these insights into training is not always a good idea. It tends to create digressions that are not informative to the observers. Confusion and conflicting instruction may result. Observers are not concerned with each individual measure and will be overwhelmed by analysts' expectations if analysts' comments are not well integrated into the training. It is better if analysts can identify those measures for which they are not getting data of sufficient quality or quantity and communicate this information to the training developers for inclusion in the POI.

Observation

Coordination to get ground truth and enemy intent is critical. This is obtained during observation, and is usually the responsibility of the observer in the Control section of the simulation center. An analyst should be assigned to this observation post. This person should also help collect other reports as available and planned.

An analyst may also be asked to play the role of a "rover" who visits the command post (CP) locations to check-in with observers and answer questions. When the team is large and the exercise structure permits, an analyst should meet with observers going on or coming off shift to answer questions.

An analyst will also sometimes be asked to be an observer in a unit location. If so, this observer should not be the facilitator of the data reduction. The facilitator role is best filled by an analyst who has observed the Control cell. An analyst must be available for data reduction facilitation who has mastered an overview of the exercise and will not be filling out data collection forms.

Data Reduction

Immediately prior to the data reduction, a brief lesson on data reduction is taught to refresh the observers' memories on the use of data sheets. Any lingering misconceptions about the data sheets should be cleared up at this time. The observers are likely to be more receptive to examining the data sheets after experiencing data collection. The observers will be very tired, and if they are to go through a brief refresher lesson, this should be clearly understood up front. All analysts present at the exercise should also attend the lesson.

As stated above, the length of the data reduction process, the manner in which it is to be carried out, and the roles that the participants are to play must be established prior to the exercise

In some applications, data collectors will be issued data reduction forms, either for direct collection of data onto reduction forms in the field, or for preliminary reduction of their journal data during "off-peak" time in the field on their own time. The following passages assume that data collectors are reducing data from journals. Those who have collected data on forms during the exercise for whatever reason should be encouraged to participate fully in data reduction anyway. They should review their data forms carefully, as they will not have been prepared with the benefit of hindsight and interaction available during formal data reduction. And their insights and observations will profit the other data collectors in the same way; even if a collector's data were to

be already fully reduced at the start the process, his or her experience is still vital to the group's understanding of the exercise as a whole.

Constructing an Exercise Timeline to Guide Data Reduction

A Chief Analyst or other subject matter expert (SME) must be designated as the facilitator during data reduction. This person must not have other data reduction responsibilities. The Chief Analyst must have control over the data reduction. Timeline creation will take several hours and must be completed before the observers begin filling out any data reduction forms.

The timeline is a critical instrument for the analysts. What do we mean by facilitating the timeline construction? First, the stage must be set. Ground truth, enemy intent, and documentation (reports, orders) should be available. A map with an overlay should be available and in plain view. The facilitator must have an understanding of the battle flow. The facilitator or someone he designates acts as a recorder, transcribing the timeline as the discussion progresses. The recorder needs a flip chart, markers, and masking tape to construct the timeline.

The observers must be comfortable and ready with their notes. They must understand what the process will be before you get started. It is a good idea to have another analyst present to take notes of insights and other issues, especially if the facilitator is also serving as a recorder of the timeline. A pre-meeting among a sub-group of the team who might be the most informed can help set the stage for the discussion.

When the stage is set, how does the facilitator proceed? A facilitator controls the flow of observer remarks during a discussion of the events of the exercise. Usually the group discussion will start slowly and the facilitator will need to "prime" the group with a lot of questions. The observers need to be coached into participating in the discussion.

The facilitator prompts observers by starting with small chunks of time, beginning to end. He should begin the discussion at STARTEX and ask "What was the first significant event?" After receiving a response, he asks "Has anybody got anything before that?" He continues building from event to event with decisions, stimuli, etc. overlaid on the flow of exercise events. Usually, battles will progress through several phases (movement to contact, offense, defense, passage of lines); exactly what order these will occur in depends on the scenario.

The observers must be involved in timeline conversation right away. They should not be told what happened; they should tell the facilitator. The facilitator must continue to question the observers as the timeline is elaborated with events, decisions, reports, etc. When decisions are put on the timeline, the facilitator should backtrack to the stimulus .

It is important for a recorder to draw the timeline so the observers can see it. Recorders sometimes make mistakes or timelines need to be edited, and this way the observers can see and offer corrections to the timeline.

Enemy intent and ground truth can supplement the discussion. The facilitator can call on specific observers as needed to get the full picture.

The facilitator should give examples of ACCES concepts during the discussion as they come up by saying "That's important, that's a good example of... ", etc . He should use the correct ACCES terms and use them repeatedly. He should keep the discussion moving, and advise the observers when to annotate their notes. The facilitator should flag who ought to talk to whom during data reduction as the timeline is produced. When the timeline is done, the other analyst who is taking notes should get more detail in his notes on stimuli and decisions. He also should make a running list of decisions.

The facilitator should take time during the data reduction phase to ask observers what they think they were seeing and why, so as to help build insights for the report. He should try to draw insights out of observers at different points during the timeline discussion and ask them questions to verify insights; questions like "Why did the unit begin to become reactive?"

The facilitator must know more about the battle than anyone else, and refuse to allow the discussion to lapse into irrelevant detail. He must know how to control the flow of the discussion by gently pulling away from digressions or an over abundance of detail. He might use phrases like, "That's an important point, and you can come back to it in detail on the data sheet. Let's go on to what happened next." or "That doesn't seem to have a significant impact on the battle. What else was happening at this time?" Facilitation means making a process smoother and more effective. This takes forethought, hard work, imagination, patience, and is improved considerably by experience.

Quality Control of Data Reduction Sheets

After construction of the timeline, two analysts should be available to answer questions. These are the analyst who facilitated the timeline and the analyst who took notes on the findings. The facilitator should specifically instruct the observers to ask these analysts for help if they have problems during reduction. Problems solved should be announced to the group if there is a teaching point. Mini-rules for consistency within this data set are established in this manner. If observers don't come to the analysts to ask questions, the analysts should go around and check on the observers as they fill out sheets. The simulation center (Control) observer should be free to be in one of these analyst roles. Analysts could update the timeline as new information emerges during reduction.

Near the end of day one, the analysts should begin quality control. They should start by checking data sheets for incomplete and ambiguous information. Sheets with such problems should be flagged and returned to the data collectors for correction or completion, with a clear indication of what items are missing or need confirmation. If they are completed or corrected, mark them with a green marker; if they cannot be corrected or completed,

mark them with a red marker. This will help later in compiling statistics regarding what items were most difficult to understand or to answer. The analysts then continue through the data sheets by type (e.g PD, CA, etc.)

The second quality check comes when sheets are handed in for final review. During the review, the observers fill out any evaluation sheets that are required, such as training assessment, reliability tests, and so on. The second review is to check whether classifications are correct. Are all actions and event recorded as decisions really decisions? Do all the sheets coding situation assessments really record information about situation assessments?

After data reduction, the analysts should package the data for return to their office. Packaging should be done so as to preserve the grouping and organization of data sheets they have been able to make so far. The material to be returned usually includes any and all exercise documentation, observer journals and related data forms (with data for each collection location together), and the timeline and analyst notes. Each type of material should be packaged and labelled separately. After classified exercises, there will be security procedures to follow for dispatching any data or exercise materials, and prior planning should have included checking for post offices, hours of operations, and (if necessary) secure overnight storage on the military facility itself. The Chief Analyst labels the documents and takes care of security markings. Every effort should be made to mail classified material. Have courier orders ready if this is not possible.

Suggested Data Collection Plan Format

- 1.0 Statement of Objectives
- 2.0 Background
 - 2.1 Unit To Be Observed
 - Organization (Personnel, C2, Formal/Informal)
 - Unit SOP (Briefings, CP Set-Up, Report Cycle, etc.)
 - Measure Requirements
 - Confirm with Unit
 - Other Involved Headquarters (Higher and Adjacent, Joint, Allied)
 - 2.2 Exercise
 - Date
 - Location
 - Participants
 - Objectives
 - Events of Interest from Master Event List/Script/Exercise Plan
 - 2.3 Resources
 - Number of Observers & Analysts Available
 - Background of Observers (Previous Military Experience, ACCES Experience, etc.)
 - CPs & Other Locations to be Observed
 - Training Facilities
 - Pre-Exercise Field Visits & Briefings
 - Travel Arrangements for Observers & Analysts
- 3.0 Collection Focus

- 3.1 Data Collection
 - Objectives & Events to be Targeted for Collection
 - Measures to be Used
 - Sources of Data
 - Exercise Plan
 - Directives
 - Message Traffic
 - Interviews, Manuals, Historical Data
 - Quality & Selection of Data to be Used (All Data, Randomly Selected Data, Planned Sequences of Data)
 - Procedures for "Automatic Capture" of Exercise Documents (e.g. Message Traffic, Briefing Slides, Overlays)
- 3.2 Observers
 - Organization of Teams
 - Team Size & Structure
 - Responsibilities
 - Reporting
 - Objectives
 - Assignments
 - Supervision
- 4.0 Construct Task-Oriented Schedule
 - 4.1 Assign Responsibilities
 - 4.2 Important Topics
 - Advance Team Duties
 - Exercise Application
 - Observer Transit
 - Training
 - Observation & Data Collection
 - Data Reduction
 - Post-Exercise
 - Measure Computation
 - Analysis
 - Insight Development
 - Report-Writing
- 5.0 Problems
 - 5.1 Clearances
 - 5.2 Travel (Long Distance & Local)
 - 5.3 Food & Lodging
 - 5.4 General Security and/or Classified Exercises
 - Badges
 - Local Military Security Contact
 - Data and Document Storage and Transfer (Mail, Courier Papers, etc.)
 - 5.5 Working Areas
 - For Training
 - For Data Storage
 - For Data Reduction
- 6.0 Log Book
 - 6.1 Exercise Events
 - 6.2 Problems and Solutions

The Analytical Process

Analysis is a process of extracting the collective knowledge of all who observed the exercise, producing ACCES scores and drafting insights that arise outside the formal measures, and organizing that information to support C2 analysis and feedback. The team of observers collects the data that describes a unit's C2 behavior; the analysts' job is to produce a picture of the unit's performance by integrating the data from different times and locations, together with their view of the entire exercise obtained in the Control cell. Analysts must not introduce opinions as data. The analysis process should provide insights into performance, but these insights must be supported by measured evidence of behavior. Often insights arise from patterns that cut across ACCES measures. For example, errors in information handling might occur infrequently in a particular exercise, but almost always in interactions with that unit's Aviation Brigade. Other insights arise from patterns over time or across command centers (for example, whether DTAC is looking as far into the future as the DMAIN, or Plan Duration decreases after the first day of each exercise).

Analysis itself consists of four parts: the final "scrubbing" of the data, the computation of measures, the construction of a storyboard, and the integration of the measures and the storyboard into reportable insights.

Computing measures means, basically, taking the individual data elements from the observers' data sheets and manipulating them mathematically (usually summing them, or dividing one by another) to get individual scores ("items") for each observed event of a particular type. These scores are then used to compute a measure score that represents the performance of the entire unit over a given period of time (e.g. a day, a phase of the battle, or the course of an entire exercise).

The storyboard for an exercise starts with the timeline constructed during data reduction, and builds on it. The end-product should combine the data collectors' observations of events and the ground truth data and observation garnered by the analysts in the SimCenter. The storyboard comprises many individual "stories." Each represents an event or action that took place during the exercise and was of significance in the C2 context. For example, artillery fire cratering a road and making it unserviceable might have no importance in and of itself, but if use of the road was part of a planned movement, then the event will be of significance (whether the unit realizes the problem or not). The story board helps to pull the measures together, and provides a means for understanding data that might otherwise be confusing.

Each measure is computed separately for each "thread." A thread is the occurrence of one of the C2 activities that are represented by a category of ACCES measures, at a particular place and time; for example, the reception or dispatch of a SITREP in Ops would be one thread, an assessment in G2 another, a coordination between the FSE and the ALO a third. The computation of a measure for a particular thread is called an "item". Thus Report Lateness is an IH measure, but the lateness of the 012300 SITREP is an item.

The computation of the measures and the understanding of their context through exercise stories are inextricably linked endeavors. Without one activity, the value of the other is substantially reduced.

Analysis Begins

After the data collected during the application have been reduced onto data reduction sheets, they must be double-checked for accuracy (of categorization, etc.) and completeness. Some missing data can be supplied by the analysts from the ground truth data gathered at the SimCenter. Others may be found by reviewing observer notes or exercise documents. The connections between forms (made by the data collectors' use of the "other related data sheets" field) should also be double-checked at this point to ensure that the related forms exist and are clearly connected.

Some data may have to be discarded, if they cannot meet the standards of completeness or clarity. These discards should be noted, both for the data "audit trail" and for the improvement of observer training and/or feedback.

Computation of Measures

The measures themselves are raw indicators of the success of the unit observed in carrying out certain C2-related processes that are considered instrumental to efficient and effective performance on the battlefield.

Most of the measures are "ascending" measures; that is, better performance will produce higher measure scores. A few measures are "descending"; for those measures, a lower score indicates better performance. Most of these descending measures are measurements of error (e.g. error in unit locations, percent of regular reports submitted late). Others are measurements of time taken to complete processes, in which shorter times are preferred, assuming that process quality is constant.

The overall score for a measure over the course of an exercise is derived by "rolling up" all the items into a single figure. Only items of the same measure (e.g., Report Lateness, Number of Staff Sections Participating in a COA Analysis, etc.) are rolled up together.

It is important to emphasize the word "appropriate". Part of the value of the storyboard is that it provides insights to the analyst concerning the circumstances causing and/or affecting a particular story or thread. Some data, put in their proper context, may be deemed by the analyst to arise from or contain such exceptional circumstances that they ought not to be rolled up into the overall measure, or even scored. Data that deal with an event "corrupted" by the simulation driving the exercise are a prime example of such "drop-outs". The analysts must be careful, however, to document the exclusion of these data and the reasoning behind it.

Each data sheet will not necessarily produce a single thread. An event may be observed by more than one data collector, resulting in several sheets, that are then combined by analysts into one thread. In some cases more than one thread (or elements of several threads) may be present on a single data sheet, and several data sheets

may contain elements of a single thread. Data reduction should reduce the number of these circumstances, but will not eliminate them.

Stories and threads are generally intertwined in a complex manner. A story will have a decision thread at its heart; other information and assessment threads will have contributed to the formation of the decision, as directive and coordination threads will reflect the implementation of the decision. But threads will often be part of more than one story, especially in larger units, as the same report produces different assessments, or a single assessment produces different actions on the part of its various receivers.

Templates

To assist the analyst in computing the measures, a number of templates have been designed to illustrate the data that are required from each thread for each set of measures. Each template is divided into rows and columns. Each row represents one thread, and each column a data element that is needed to compute certain measures. A column may be used in more than one measure. The intersection of a row and a column contains a datum that is used to compute a specific item.

The G measures, a special case, deal with threads called plans. Some G measures also deal with directive threads. All the data on directives is combined on the PD template, for the sake of simplicity and consistency. Thus, some data for G measures will have to be sought from the PD template.

Some columns require an expert judgement, usually made by the analyst from the reduced data or from the storyboard; "C2 Failure?" on the G Sheet is an example. The reduced data will not always provide all the information on a thread required by the template. This simply means that some of the items cannot be computed for that thread. The items will be computed for those threads that contain the needed data, and the measure rolled up from those items alone.

A very few of the measures not only require expert judgement, but do not lend themselves to computation on a template; these require the analyst to examine a thread in the context of the story it is a part of, and assign a value to the measure based on that examination. SA 7.0 ("Assessment Agreement Within CPs") is one of these measures.

Some threads deal with multiple occurrences for a single item; an example would be a SITREP containing a number of unit locations. The measure must be separately computed for each occurrence, and then rolled up as a single item for the thread. Thus the error in unit location for a particular report would be computed for each unit in the report, then rolled up into a single item of unit location.

Once the analyst has identified the individual threads, and computed those items for which data are available, thread by thread, the next task is to roll up or combine the items into measures. Combined scores are computed for each node (a group of cells such as DMAIN or DREAR) groups of nodes (such as all DMAINs, DTACs, DREARs, or Brigades), for all nodes taken together, for all the data categories taken together, and for all the

exercise days taken together. A summary score matrix should be constructed along these lines. In an ACCES analysis, every score is supported by a detailed matrix that makes the scoring clear. Whenever possible, analysts should use a computer spreadsheet to perform calculations and to organize these materials.

The Storyboard

Stories are the "building blocks" of ACCES. Each story starts with the recognition of a current or approaching change on the battlefield that necessitates action by the unit CP(s). The CP examines the situation, formulates and evaluates alternatives for action, selects one or more alternatives, informs the CPs concerned, and oversees the implementation of the selected action(s).

The easiest way to perceive stories is to identify the decisions occurring during the course of the exercise, and "look" both backwards and forwards from those decisions, to see both their antecedents and the activities that resulted from them. Analysts will often begin their compilation of stories by examining the most interesting events of an exercise (e.g. the Blue counterattack, the destruction of a major river crossing), dissecting them to determine the decision or decisions involved, and connecting those decisions to other activities forward and backward in time.

But analysts should beware of using the timeline constructed during data reduction without careful scrutiny of all the threads, stories, and events contained in it. Extraneous events that do not really match the description of threads or stories may have crept in during the timeline's construction. Conversely, items that appear isolated in the timeline may form an important story when connected.

Some events may have had little or no ACCES data collected about them; these cannot be included in the ACCES measures but they are still valuable, because they indicate areas of insufficient observer coverage. This may be due to restriction of resources (e.g. not enough data collectors) or of opportunities (e.g. a location in which it was impractical or impossible to place a collector).

Analysts should also be aware that the occurrence of stories is not "linear". Very often, several stories may be occurring at any one time in the exercise. For instance, if a road is heavily shelled, the engineers may hear about it before, after, or at the same time as the operations center, and may make their own assessment of the situation and formulate, approve, and coordinate their own reactions independently. The same event may, therefore, belong in more than one story.

Integration

Armed with these measures and the storyboard, the analyst may now begin to draw conclusions about the performance of the unit during the exercise, and to examine larger hypotheses about the interrelation of C2 processes and their respective effects upon one another.

The analysts have by this point produced a set of scores that represent the C2 performance observed by the ACCES application team. But these numbers (like the scores of individual threads) need to be put into

perspective; they must be given a context and interpretation, or they will not be of value to those outside the ACCES team.

The numbers are scores, but scores must be able to be compared to something to have value. ACCES scores can be interpreted by comparing the score of one measure across several nodes; this will render comparisons of performance within the unit. They may be compared with scores from a database of previous ACCES applications; this renders a comparison with other units and eventually with some sort of Army "norm".

ACCES scores may also be compared with a hypothesized figure. In this way, theories concerning C2 processes may be tested by comparing them with empirical evidence. ACCES scores for a measure (or rather, their variation over time and condition) may be compared with scores for the same or similar measures from other ACCES applications. This can yield insights into the effect of various conditions on an individual measure, or of one measure on another.

Deciding which of these types of comparison are to be made is to some extent the purview of the analytical team. But the analysts must bear in mind the Data Collection Plan for that particular application while carrying out their integration. The plan lays out certain goals and objectives, around which the collection was to be structured, and the answers to the questions posed by the plan should be addressed before other subjects are taken up.

Reporting

Reporting includes a formal final report and may also include an initial briefing of insights. Reporting always carries a responsibility to maintain a neat, well-organized "audit trail" to answer questions and provide guideposts for future analysts and researchers.

The Final Report is the culmination of the application. It should provide a clear and accurate picture of what happened during the application, and of how the analysis was conducted. It also should contain sufficient data to support all statements made in the text. The Final Report (and any other reporting on the application) should be oriented toward the objectives of the current ACCES application, as stated in the data collection plan.

There are six major arenas where ACCES can be of value. They are:

- the construction of C2 databases,
- the provision of exercise feedback,
- the provision of training evaluation and development,
- the evaluation of equipment use and "value-added,"
- the conduct of C2 experiments, and
- the support of simulation development.

Each of these arenas has interests to be addressed when reporting on an ACCES application; the analysts should be sure when writing that they are responding to the concerns of the arenas for which the report is destined. The following sections provide guidelines and a suggested format for reports.

Quick Reporting

Insights will be accumulated during observation and data reduction. Some insights can be derived directly from observation and, rarely, may be appropriate for immediate feedback; for example, "The unit was doing classic crisis management instead of planning and, under stress, their staff process broke down." or "The unit never displayed Red and Blue on the same map together, so they had a hard time seeing the situation." Insights generated before analysis can often be validated later with scores for final reporting. ACCES is not really structured for quick reporting, so analysts, especially those without a great deal of experience, should be careful what kind feedback a unit is given prior to completing analysis.

Further insights will be arrived at during analysis. The latter insights will take the analysts into the implications of the scores. These additional insights are included in the final written report.

In those cases where feedback during the exercise is a goal, data forms must be completed in the field. This can be done if the proper equipment and training is supplied in advance to the collectors and fully integrated into the data collection plan. For example, hand-held computers can be used to collect and store data; the data would be "harvested" at regular intervals for immediate reduction, preliminary analysis, and reporting. In such circumstances, emphasis should be placed on collection of those data that can be observed at one site and over

a short period of time (for example, most assessment items are easier to collect "instantly", both in terms of time and space, than are information exchange items).

The Final Report

Reports should be composed in succinct, straightforward language. Statements should be supported with the evidence of data and measure scores. Analysts should use standard formats for the introductory material describing ACCES and the exercise. After this introductory passage, present the General Measures first, then the diagnoses of all the various categories and measures.. The use of examples and graphic displays make the report easier for the reader to comprehend. People will remember a sketch or an example more easily than text or tables of numbers.

The Executive Summary

The Executive Summary is critical. Many senior people who pick up the report may only read the Executive Summary. It is critical that the nature of the ACCES methodology, the story of the exercise, and any important insights and findings are described in a summary that is easy to read, clear, and concise. If the intent is to influence a trainer, a commander, a researcher, or other potential reader, the Executive Summary should convey the nature and importance of this information. It should be written last, after the story of the exercise and the central insights are firmly established and have been discussed for clarity and accuracy.

The Executive Summary is written for interested persons who do not wish to study the entire report. This summary should contain every important point made in the report's main body, but be brief. The introductory paragraph should describe the purpose of the report; the second should deal with any unique features of the application and its relationship to other applications. These two paragraphs provide a perspective for the remainder of the summary. Areas of importance are the strengths and weaknesses of the C2 processes observed, and any patterns that can be perceived.

Overview of ACCES

Some overview of ACCES is needed in the report as not every reader will be familiar with ACCES. A set description should be developed for all reports and then revised only if the methodology is revised. This overview may refer the reader to the report Appendices that show the measures and data. A separate subsection should address the data collection plan (including its objectives) and its execution. This subsection should address in general terms the measures used for the application. It should discuss who the observers were and where they were placed. Any problems encountered in relation to observation (such as certain types of data that could not be obtained) should be explained.

The Exercise Overview

The Exercise Control measures describe the exercise environment. Many of these are of special interest to database developers and researchers identifying trends. This section should also briefly describe the exercise

scenario, the tactical command structure, the actual commands involved in the exercise, and any unique features that of this exercise.

In describing the flow of the exercise, it is helpful to report a list of decisions and describe in general terms what went on during the exercise. This sets up the report by providing the context in which the measures can be understood. The reader can then compare measures reported with the flow of the exercise.

Reporting Measures

Results are reported in tables for each measure within a measurement category. A commentary that is objective and narrative in nature should be provided for each measure and should explain the relevance of scores. Possible reasons for high and low scores should be included in the commentary on each measure.

The report should address the measures sequentially. The General Measures should be covered first, since they provide measures of the overall effectiveness of C2. Whenever possible, relate the measures to the exercise context by using short examples in the narrative. Such examples can illustrate weak or excellent performance and the relationships that the analysts perceive among the measures. For example, if a unit's ability to assess the situation is routinely incorrect, this should show up in their inability to prepare successful plans. The analysts should provide as much explanation for C2 performance as is reasonable, and support the explanations with references to data.

Insights

Analysis needs to go beyond the calculation and comparison of scores, for two reasons:

- the objectives of the application are unlikely to be stated in terms of these scores, but will address broader questions;
- few readers of the analysis will know what to make of a set of numerical scores without some interpretation in everyday language relating the scores to command performance.

The scores themselves can be a source of insights. Unusually low scores may be indicative of specific problems, and the data collection process permits tracing them to their source. Unusually high scores may be a clue to conditions that permit the most effective staff performance. Finally, more complex patterns in the scores can tell the analyst and the command something about performance. This is especially true of trends over time. Day-to-day variations in the scores can reveal learning effects, strengths and weaknesses in training, and the effects of strong or weak procedures. Variations from application to application have reflected changes in staff organization and the effects of workload, unit experience, and participation by senior officers.

Experience with the methodology to date has produced certain repeated relationships and patterns that aid in developing insights:

- a predictable relationship between cycle times for the three CPs (DMAIN usually takes the longest and DREAR the shortest time; DTAC is usually in between),

- an increase in the number of plans (resulting from major incongruence between the actual and the desired situation) combined with a faster pace of battle, indicating a reactive rather than a proactive mode,
- a failure to consistently monitor deep and/or flank activity leading to major incongruences,
- plans with only a single option bespeak "brittle" planning.

Some insights typically come to observers as they witness the staff in operation. Even though the observer's prime objective is the collection of data, a good observer is one who thoroughly understands the process he is observing and what it is trying to accomplish. Such an observer is usually able to develop insights into causes, effects, and relationships that may or may not be reflected in the eventual scores.

Insights can and should be refined by discussions among observers and analysts. When finally reported, they should be stated in terms that address the objectives of the application. Those objectives should be the primary guide to any search for meaning in whatever appears in the calculated scores or the observed performance. They also may provide a useful structure for organizing and reporting insights. Often the insights will be organized according to the measures used.

Crucial points in developing and reporting insights are:

- The analysts should never guess, even if they strongly believe in their guesses.
- Analysts should, however, infer. These inferences should be supported by evidence, discussed with the other analysts, and documented in the report.
- Tables of numbers don't mean much to most people. They need to hear what happened. Graphics can be invaluable here; an appropriate graph presenting the same information as a table, but in a more visually approachable format, can make all the difference.

Briefings in Conjunction with Final Report

An application briefing may be required; it should be prepared in conjunction with the application report and should contain sufficient information and supporting data to provide a clear understanding of C2 performance.

A suggested briefing format is as follows:

- Objectives:
 - A reiteration of objectives as set forth in the application directive, and
 - command and control evaluation objectives.
- Review of the Methodology: a review of the ACCES model and the measures used for this application.
- Exercise Environment:
 - An organizational hierarchy chart listing the tactical organization as specified in the application directive matched with the actual organization employed in the exercise.
 - A description of any aspects of the application that set it apart from others .

- Exercise Limitations: exercise artificialities and their impact on C2 evaluation.
- Insights, with supporting scores taken directly from the final report.
- Trends and patterns supported by a comparison of scores with past applications.
- Overall conclusions: lessons learned from insight and appropriate recommendations.

Appendices and Documentation Trails

Each Final Report should be a complete package. There is no way to know who may at some time pick up a report and read it. Each report ought to be free-standing. This is accomplished by including: the overview of the exercise, the overview of ACCES, identification of the report such as the date, and at least two appendices (the current measures and the current data sheets). In addition, a file or notebook should be maintained that contains the exercise documentation clearly labeled, including the scoring matrix, and all back-up documentation generated.

Some consideration must also be given to the control and proper employment of findings. Units must, of course, receive reports on the results of applications involving them; this is as much a matter of courtesy as a matter of feedback. Security procedures should generally ensure that no report can be used to make comparisons between the performance of one unit and that of another. But it is equally important to remember that each application of ACCES speaks relatively little by itself. It is only with the accumulation of data over time, across various types of units, scenarios, and conditions that valid and reliable comparisons may be made and benefit derived from the ACCES methodology.

Scoring Templates for ACCES Data Analysis

G Template

<u>Plan</u>	<u>Success</u>	<u>Time Implemented</u>	<u>Time Ended</u>	<u>Time Supposed To Be Initiated</u>	<u>Time Expected To Be Fully Completed</u>	<u>Mission</u>	<u>Task Org.</u>	<u>Schedules</u>	<u>Boundaries</u>	<u>C2 Failure?</u>
P1										
.										
.										
.										
Pn										

NB: Also see PD template for directive information.

I/O Template

Type	I/O ?	Time Received/Sent	Late?	Time Due	# of Elements Reported	# of Elements Queried	Unit Location Error
R1					ID Capability Combat Activity	ID Capability Combat Activity	Unit 1... Unit n
.							
.							
.							
Rn							

SA Template

Assessment	Empty/Enemy?	Comprehensive?	# of Elements	Correct	Incorrect	Could Not Be Determined	# Futures Considered ?	Assessment Was:	Time Expressed	Time Expressed	Good To
Assessment	Empty/Enemy?	Comprehensive?	# of Elements	Correct	Incorrect	Could Not Be Determined	# Futures Considered ?	Assessment Was:	Time Expressed	Time Expressed	Good To

SA1



1

SAN

NB: SA 7.0-SA 8.2 must be computed by detailed comparison of SAs at various CPs.

CA Template

<u>COA Analysis</u>	<u># Staff</u>	<u># Sections</u>	<u># of COAs</u>	<u># Seriously Considered</u>	<u>Time Completed</u>	<u>Time Good To</u>	<u>COA Analysis Included:</u>	<u>Enemy Reaction</u>	<u>Enemy Capy.</u>	<u># of Enemy Reactions Considered</u>
CA1							Mission Accompl.			
.										
.										
.										
CAn							COA1.....COAn			

DC Template

Decision	By Whom?	What Units?	What Elements?	Contingency?	Time	Type of Operation
D1						
.						
.						
.						
Dn						

PD Template

<u>Directive</u>	<u># Staff</u>	<u># Sections</u>	<u>Type</u>	<u># Elements Consistent w/ Decision</u>	<u>Required Clarification?</u>	<u>If Issued by all CP: Consistent w/ Primary CP?</u>
D1						
.						
.						
Dn						
	<u>Time Stimulus Perceived</u>	<u>Time of Decision (DC)</u>	<u>Time Work Stops</u>	<u>Time Dir. Issued</u>	<u>Time Expected... (also G)</u>	<u>Time Rec'd</u>
D1					<u>1st Element to be Initiated</u>	<u>Unit1</u> <u>Unit2</u> <u>Unit3</u> <u>Unit n</u>
.					<u>To Be Fully Completed</u>	
.						
Dn						

APPENDIX D

ARMY COMMAND AND CONTROL EVALUATION SYSTEM (ACCES)

ACCES MEASURE DEFINITIONS

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
PLAN DURATION	G 1.0 The period of time the full plan is in effect. The elements of a plan are: Mission, task organization, schedule and boundaries. Contingencies expressly stated in the plan are included as part of the original plan.	time the plan ends minus time the plan is implemented	A plan is any occurrence of these four elements. A plan is implemented when its first element(s) are initiated. A plan ends when any of its elements are altered beyond the contingencies expressly stated in the plan. If implementation is based on events or "on order," this time is identified by observation. A list of plans will be prepared during analysis.
Mission Duration	G 1.1 The period of time the plan mission assignments remain in effect.	time mission assignments change minus time mission assignments established	Mission assignments are established on the implementation time of the first plan that uses them. They are changed the first time a plan is implemented that alters them.
Task Organization Duration	G 1.2 The period of time that the plan task organization assignments remain in effect.	time task organization changes minus time task organization established	The same procedures apply to all measures in this family.
Schedule Duration	G 1.3 The period of time that the plan schedule remains in effect.	time schedule changes minus time schedule established	
Boundary Duration	G 1.4 The time that the plan boundary assignments remain in effect.	time boundaries are changed minus time boundaries established	

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
PLAN STABILITY	G 2.0 The percentage of the intended plan life that the plan remains in effect. The intended plan life is the period of time the plan is supposed to be in effect.	plan duration ----- intended plan life	Plan duration is Measure G 1.0. Intended plan life begins when first plan element is supposed to be initiated and ends when plan is expected to be fully completed. If implementation is based on "on order" events, both times are identified by observation. Intended plan life is directive time-span (PD 5.0).
Mission Assignment Stability	G 2.1 Percent of time that the plan mission assignments remain in effect.	mission assignment duration ----- intended plan life	Element durations and intended plan life as above.
Task Organization Stability	G 2.2 Percent of time that the task organization assignments remain in effect.	task organization duration ----- intended plan life	
Schedule Stability	G 2.3 Percent of time the plan schedule remains in effect.	schedule duration ----- intended plan life	
Boundary Stability	G 2.4 Percent of time the plan boundary assignments remain in effect.	boundary duration ----- intended plan life	
PLAN EXECUTION	G 3.0 The percentage of plan elements completed within original contingencies. This indicates adequate adaptation to battlefield conditions.	number of plan elements surviving ----- total number of plan elements	For any one plan, the total number of plan elements is always four. However, for a period of time (a day, an exercise phase, an entire exercise) the number of plan elements equals the number of plans multiplied by four.

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
PLANNING SUCCESS	G 4.0 The percentage of plans which are dominant or adaptive.	number of dominant plans plus number of adaptive plans ----- total number of plans	<p>A dominant plan is one that is executed without changes or the activation of contingencies. A dominant plan may require coordination. Friendly forces held the initiative throughout the intended life of the plan. That is, they were able to select the time and place for significant combat ; the enemy forces' options were severely limited. The class of dominant plans comprises all those plans for which plan duration equals intended plan life.</p> <p>Adaptive plans are those where the execution of the plan required activation of at least one contingency, but no change to the plan beyond those originally contemplated. Friendly forces held the initiative throughout most of the intended life of the plan, and those options the enemy possessed were provided for by contingencies contained within the body of the plan.</p> <p>Plans which were neither dominant nor adaptive were unsuccessful; the plan could not be executed without complete revision.</p> <p>Plan success is, necessarily, evaluated after the fact.</p>

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
PLANNING INITIATIVE	G 5.0 The percentage of proactive or contingent directives.	number of proactive directives plus number of contingent directives ----- total number of directives	<p>Directives are statements, verbal or written, that describe plans to those tasked to implement them.</p> <p>Initiative is evaluated by analysts, based on the following criteria:</p> <p>Proactive directives assume complete understanding of the battlefield. These directives do not depend on developing new information during the intended plan life.</p> <p>Contingent directives assume a general understanding of the battlefield and posit multiple COAs depending on the course of events during the intended plan life. Enemy forces are assumed to have alternative courses of action. Directives include contingency plans for friendly forces that can be triggered by new information about the battlefield.</p> <p>All directives not proactive or contingent are reactive. Reactive directives reflect considerable uncertainty about the battlefield situation. They assume the enemy has the initiative and thus that friendly forces' COAs will be determined by the enemy COAs. Therefore, reactive directives depend on new information about the battlefield being developed during the life of the plan.</p>

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
PLANNING CYCLE TIME	G 6.0 The time used to complete a planning cycle.	time directive issued minus time stimulus perceived	If a commander is issuing a verbal directive (i.e., giving an order directly to the person or persons responsible for executing it), the directive is considered to be "issued" the instant he finishes speaking. If he expresses his guidance to his staff verbally, no directive has been issued; a decision has been "made" (expressed in a manner that can be perceived by those responsible for producing the implementing directive) and the staff must then prepare a directive. Stimuli are events that motivate planning decisions in the command center. They are "perceived" when explicitly recognized and understood in the command center. Changes in the operating environment (METT-T) and message traffic are normally key sources of stimuli.
Low Planning Stress Cycle Time	G 6.1 The time used to complete a planning cycle when the prior cycle was dominant.	planning cycle time	Prior cycles are evaluated during data analysis. The planning stress associated with a cycle is determined by the success of the plans implemented during the prior cycle, as laid out in G 4.0. The first cycle in any command center cannot be evaluated, because there are no prior cycles.
Moderate Planning Stress Cycle Time	G 6.2 The time used to complete a planning cycle when the prior cycle was adaptive.	planning cycle time	

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
High Planning Stress Cycle Time	G 6.3 The time used to complete a planning cycle when the prior cycle was unsuccessful.	planning cycle time	
C2 IMPACT ON PLANS	G7.0 The percentage of changes to plans that are not attributable to the failure of C2 processes.	number of plan changes not attributable to the failure of C2 processes ----- number of plan changes	Each plan change will be evaluated to determine whether it resulted from a C2 failure and, if so, in which area.
Incoming Information Plan Impact	G 7.1 The percentage of plan changes not due to the failure of incoming information processes.	number of plan changes not attributable to the failure of incoming information processes ----- number of plan changes	
Situation Assessment Plan Impact	G 7.2 The percentage of plan changes not due to the failure of situation assessment processes.	number of plan changes not attributable to the failure of situation assessment ----- number of plan changes	
Course of Action Analysis Plan Impact	G 7.3 The percentage of plan changes not due to the failure of COA analysis processes.	number of plan changes not attributable to the failure of COA analysis processes ----- number of plan changes	
Preparation of Directive Plan Impact	G 7.4 The percentage of plan changes not due to the failure of directive preparation processes.	number of plan changes not attributable to the failure of directive preparation processes ----- number of plan changes	

CATEGORY G: GENERAL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Information Exchange Plan Impact	G 7.5 The percentage of plan changes not due to the failure of information exchange processes.	number of plan changes not attributable to the failure of information exchange processes ----- number of plan changes	
Outgoing Information Plan Impact	G 7.6 The percentage of plan changes not due to the failure of outgoing information processes.	number of plan changes not attributable to the failure of outgoing information processes ----- number of plan changes	

CATEGORY I: INCOMING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
SITUATION REPORTS (SITREPs) RECEIVED	I 1.0 The number of SITREPs received.	number of reports received in a selected period of time	A SITREP is a scheduled report on friendly troops that contains: identification of the unit(s) concerned, their location, their capabilities and their combat activities.
% of SITREPs Received Late	I 1.1 Percentage of SITREPs received late.	number of reports received late ----- total number of reports received	
SITREP Lateness	I 1.2 Time late of those reports that are late	time received minus time due	
INTELLIGENCE SUMMARIES (INTSUMs) RECEIVED	I 2.0 The number of INTSUMs received.	number of reports received in a selected period of time	An INTSUM is a report similar to a SITREP, detailing friendly information on enemy troops.
% of INTSUMs Received Late	I 2.1 Percentage of INTSUM received late.	number of reports received late ----- total number of reports received	
INTSUM Lateness	I 2.2 Time late of those reports that are late.	time received minus time due	
SITREP ELEMENTS REPORTED	I 3.0 The number of SITREP elements included in reports.	number of elements reported	Scoring is by report element, not by item; that is, a report identifying four units and their locations would be scored as containing the identification and location elements.
INTSUM ELEMENTS REPORTED	I 4.0 The number of INTSUM elements included in reports.	number of elements reported	

CATEGORY I: INCOMING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
SITREP ACCURACY	I 5.0 Percentage of reported non-location SITREP elements that are correct.	number of non-location elements correctly reported ----- total number of non-location elements reported	Only those elements that are reported can be judged for accuracy. "Correct" reports are those which are consistent with ground truth. "Incorrect" reports are those inconsistent with ground truth.
SITREP Identification Accuracy	I 5.1 Percentage of friendly units identified correctly.	number of units correctly identified ----- total number of units identified	
SITREP Capability Accuracy	I 5.2 Percentage of unit capabilities that are reported correctly.	number of units whose capabilities are correctly reported ----- total number of unit capabilities reported	
SITREP Combat Activity Accuracy	I 5.3 Percentage of unit combat activities that are reported correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
SITREP Location Accuracy	I 5.4 Error in unit locations.	location reported minus ground truth unit location	
INTSUM ACCURACY	I 6.0 Percentage of reported non-location INTSUM elements that are correct.	number of elements correctly reported ----- total number of elements reported	
INTSUM Identification Accuracy	I 6.1 Percentage of reported enemy units identified correctly.	number of units correctly identified ----- total number of units identified	

CATEGORY I: INCOMING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
INTSUM Capability Accuracy	I 6.2 Percentage of unit capabilities that are reported correctly.	number of units whose capabilities are correctly reported ----- total number of unit capabilities reported	
INTSUM Combat Activity Accuracy	I 6.3 Percentage of unit combat activities that are reported correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
INTSUM Location Accuracy	I 6.4 Error in unit locations.	location reported minus ground truth unit location	
OPERATION REPORT ACCURACY	I 7.0 Percentage of non-location report elements that are correct.	number of elements correctly reported ----- total number of elements reported	An operation report is an informal, unscheduled report. The elements of operation reports are (like those of formal reports) unit identification, location, capability, and combat activity. Operation Reports deal with friendly units.
Operation Report Identification Accuracy	I 7.1 Percentage of friendly units correctly identified in spot reports.	number of units correctly identified ----- total number of units identified	
Operation Report Capability Accuracy	I 7.2 Percentage of unit capabilities identified correctly.	number of units whose capabilities are correctly identified ----- total number of unit capabilities reported	

CATEGORY I: INCOMING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Operation Report Combat Activities Accuracy	I 7.3 Percentage of unit combat activities identified correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
Operation Report Location Accuracy	I 7.4 Error in unit locations.	location reported minus ground truth unit location	
SPOT REPORT ACCURACY	I 8.0 Percentage of non-location report elements that are correct.	number of elements correctly reported ----- total number of elements reported	Spot reports are unscheduled, informal reports with the same elements as operation reports. Spot Reports deal with friendly knowledge of enemy units.
Spot Report Identification Accuracy	I 8.1 Percentage of enemy units correctly identified in spot reports.	number of units correctly identified ----- total number of units identified	
Spot Report Capability Accuracy	I 8.2 Percentage of unit capabilities identified correctly.	number of units whose capabilities are correctly identified ----- total number of unit capabilities reported	
Spot Report Combat Activities Accuracy	I 8.3 Percentage of unit combat activities identified correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
Spot Report Location Accuracy	I 8.4 Error in unit locations.	location reported minus ground truth unit location	

CATEGORY I: INCOMING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
SITREP QUERIES	I 9.0 Percentage of report elements on SITREPs queried.	number of elements queried ----- total number of elements	
Operation Reports Queried	I 9.1 Percentage of Operation Reports queried.	number of operation reports queried ----- total number of operation reports	
INTSUM QUERIES	I 10.0 Percentage of report elements on INTSUMs queried.	number of elements queried ----- total number of elements	
Spot Reports Queried	I 10.1 Percentage of Spot Reports queried.	number of spot reports queried ----- total number of spot reports	

CATEGORY SA: SITUATION ASSESSMENT MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
ACCURACY OF ASSESSMENTS OF THE FRIENDLY SITUATION	SA 1.0 The percentage of SAs about friendly forces that were correct.	number of correct assessments ----- total number of evaluated assess- ments	A situation assessment (SA) con- veys an understanding of the oper- ating environment that goes beyond factual details to an appreciation, forecast, or estimate. Correct assessments are those in which the alternative considered most likely proves consistent with ground truth, including the case where only one situation (the cor- rect one) was considered. An evaluated assessment is one for which the ground truth is known to the ACCES team. Some assessments will be made concerning situations that do not come to pass, and therefore cannot be evaluated. The unit of analysis is the assessment, regardless of how few elements it contains. An assessment is scored as incorrect if it contains one or more incorrect elements. For example, "The mechanized division in and around Hofstetler is combat ineffective" would be scored "incorrect", despite correct composition and disposition elements if the division in question demonstrated substantial combat power.
Assessments of the Friendly Situation	SA 1.1 Number of friendly SAs.	number of SAs dealing with friendly forces	

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CATEGORY SA: SITUATION ASSESSMENT MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Comprehensive Assessments of the Friendly Situation	SA 1.2 Number of comprehensive friendly SAs.	number of comprehensive friendly SAs	The elements of a friendly SA are: mission, task organization, disposition, activities, status, and support. Comprehensive SAs are those that ought to or are expected to cover all elements of a SA. Those not considered comprehensive are selective; such SAs relate to a specific topic or topics and are not expected to cover all elements.
Number of Elements in Friendly SAs	SA 1.3 Number of elements discussed in friendly SAs.	number of elements	Most commonly, comprehensive SAs are briefings to senior personnel, but they may also occur at shift change, for benefit of liaison officers, or at other times.
Number of Elements in Comprehensive Friendly SAs	SA 1.4 Number of elements discussed in comprehensive friendly SAs.	number of elements	Scoring of SAs should recognize that a reference such as "Mission remains unchanged" should be scored as an element present, since it indicates that the briefer and the audience considered the subject.
ACCURACY OF ASSESSMENTS OF THE ENEMY SITUATION	SA 2.0 The percentage of SAs about enemy forces that were correct.	number of correct assessments ----- total number of evaluated assessments	

CATEGORY SA: SITUATION ASSESSMENT MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Assessments of the Enemy Situation	SA.2.1 Number of enemy SAs.	number of SAs dealing with enemy forces	
Comprehensive Assessments of the Enemy Situation	SA.2.2 Number of comprehensive enemy SAs.	number of comprehensive enemy SAs	The elements of an enemy SA are: composition, disposition, combat power, activities, and capabilities (which includes intentions).
Number of Elements in Enemy SAs	SA 2.3 Number of elements discussed in enemy SAs.	number of elements	
Number of Elements in Comprehensive Enemy SAs	SA 2.4 Number of elements discussed in comprehensive enemy SAs.	number of elements	
ALTERNATIVE FUTURES	SA 3.0 The number of alternative futures explicitly considered during SAs.	number of futures explicitly considered	Each SA consists of one or more futures, specifically described by the primary assessor(s), or brought up in discussion as part of the assessment process.
TIME SPAN OF ASSESSMENTS	SA 4.0 The time from the expression of an assessment to the end of the period that the assessment covers.	end of period assessment covers minus the time the assessment is expressed	Each assessment, regardless of the number of elements it contains, is scored independently to determine the temporal focus of the command center.

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CATEGORY SA: SITUATION ASSESSMENT MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
ASSESSMENT AGREEMENT WITHIN CPs	SA 5.0 Percentage of agreement within CPs (between CP sections) on situation assessments (SAs) of friendly and enemy forces.	number of SA information pairs in agreement ----- total number of possible pairs	Disagreement consists either of explicit contradiction or the absence of an element at one location which is present at another. All possible pairs of the elements of the battlefield picture should be considered.
Friendly Force Agreement within CPs	SA 5.1 Percentage of agreement between CP sections on SAs of friendly forces.	number of friendly SA information pairs in agreement ----- total number of possible pairs	
Enemy Force Agreement within CPs	SA 5.2 Percentage of agreement between CP sections on SAs of enemy forces.	number of enemy SA information pairs in agreement ----- total number of possible pairs	
ASSESSMENT AGREEMENT BETWEEN CPs	SA 6.0 Percentage agreement between CPs on SAs of friendly and enemy force.	number of SA information pairs in agreement ----- total number of possible pairs	The same rules apply to agreement between CPs.
Friendly Force Agreement between CPs	SA 6.1 Percentage of agreement between CPs on SAs of friendly forces.	number of friendly SA information pairs in agreement ----- total number of possible pairs	
Enemy Force Agreement between CPs	SA 6.2 Percentage of agreement between CPs on SAs of enemy forces.	number of enemy SA information pairs in agreement ----- total number of possible pairs	

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CATEGORY CA: COURSE OF ACTION ANALYSES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
NUMBER OF STAFF PARTICIPANTS	CA 1.0 The number of staff members participating in the development and assessment of courses of action (COAs).	number of staff members	The unit of analysis for CA 1.0 and 2.0 is the development and assessment of a set of COAs. During this process a designated group explicitly focuses on alternative COAs and reaches some conclusion about which should be adopted or recommended. Participation is defined as active involvement, such as explicit discussion, drafting, review or making suggestions. Mere presence or casual observation should not be recorded as participation.
VARIETY OF STAFF PARTICIPANTS	CA 2.0 The number of staff sections participating in the development and assessment of COAs.	number of staff sections	Staff sections are those recognized within the command center, such as G3 (Ops), G3 (Plans), G2, command, etc.
NUMBER OF COAs	CA 3.0 The total number of COAs explicitly articulated during development and assessment.	number of COAs articulated	A COA is articulated if it comes up in explicit discussion, drafting, review or feedback and is recognized by the participants as meaningfully different.
Number of COAs Seriously Considered	CA 3.1 The number of COAs considered during development and assessment to the examination of which serious time and effort were devoted.	number of COAs considered seriously	Some COAs are brought up for review and dismissed without careful examination or discussion; this measure attempts to discriminate those that the staff examines carefully from those not accorded careful study.

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CA-1

CATEGORY CA: COURSE OF ACTION ANALYSES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
COMPLETENESS OF COA ANALYSES	CA.4.0 Percentage of COA analyses that include the following elements: predictions of enemy reaction, likelihood of mission accomplishment, residual capacity of friendly units and residual capacity of enemy units.	number of COA analyses considering all four elements ----- number of COA analyses	Unit of analysis from here forward is the analysis of an individual COA within the larger development and assessment of COAs.
Predictions of Enemy Reaction	CA 4.1 Percentage of COA analyses that include predictions of enemy reaction.	number of COA analyses including enemy reaction ----- number of COA analyses	
Number of Enemy Reactions Considered	CA 4.1.1 The number of enemy reactions explicitly considered during COA development and discussion.	number of enemy reactions considered	A reaction is considered if it comes up in explicit discussion, drafting, review or feedback and is recognized by the participants as meaningfully different.
Likelihood of Mission Accomplishment	CA 4.2 Percentage of COA analyses that include the likelihood of mission accomplishment.	number of COA analyses including mission accomplishment ----- number of COA analyses	
Residual Capacity of Friendly Units Involved	CA 4.3 Percentage of COA analyses that include the residual capacity of friendly units involved.	number of COA analyses including friendly capacity ----- number of COA analyses	
Residual Capacity of Enemy Units	CA.4.4 Percentage of COA analyses that include the residual capacity of enemy units involved.	number of COA analyses including enemy capacity ----- number of COA analyses	

CATEGORY CA: COURSE OF ACTION ANALYSES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
TIME SPAN OF COA ANALYSES	CA 5.0 Time from the completion of the analysis to the end of the period that the COA analysis covers.	the end of the period that the COA covers minus the time the COA is complete	Each analyzed COA, regardless of its length, is scored independently to determine the temporal focus of the command center.

CATEGORY DC : DECISION CONTROL

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
DECISION MAKER	DC 1.0 Position of the officer making the decision.	1=Commander 2=Subordinate in commander's name 3=ADC 4=Chief of Staff or Executive Officer 5=G-3/S-3 6=G-2/S-2 7=G-4/S-4 8=Other 9=Unknown	
AFFECTED UNITS	DC 2.0 Which units were affected?	menu per exercise	
DECISION FOCUS	DC 3.0 What elements did the decision concern?	1=missions 2=task organizations 3=schedules 4=boundaries 5=other 9=unknown	
CONTINGENCY	DC 4.0 Did the decision involve the activation of a contingency?	0=no 1=yes	
DECISION TIME	DC 5.0 At what time was the decision made?	time of decision	
TYPE OF OPERATION	DC 6.0 What type of operation was involved in the decision?	type of operation (offensive, defensive, other) and subcategory	This variable is to be coded in accordance with the attached table of division operation types from ARTEP 71-100-MTP.

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DC-1

CATEGORY DC : DECISION CONTROL

OPERATION

SUPPORTING MISSION

OFFENSE

MOVEMENT TO CONTACT
HASTY ATTACK
DELIBERATE ATTACK
EXPLOITATION
PURSUIT
RECONNAISSANCE IN FORCE
DEMONSTRATION
RAID
COVERING FORCE FOR PARENT FORMATION
FOLLOW AND SUPPORT

DEFENSE

AREA
MOBILE
COUNTERATTACK
SPOILING ATTACK
COVERING FORCE FOR PARENT FORMATION

OTHER OPERATIONS

RETROGRADE
BREAKOUT FROM ENCIRCLEMENT
LINK-UP
RELIEF IN PLACE
PASSAGE OF LINES
RIVER CROSSING
COUNTERINSURGENCY OPERATION
DEPLOYMENT

from ARTEP 71-100-MTP

CATEGORY PD: PREPARATION OF DIRECTIVE MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
NUMBER OF STAFF PARTICIPANTS	PD 1.0 The number of staff members participating in the development of directives.	number of staff members	<p>Directives are statements, verbal or written, that describe plans to those tasked to implement them.</p> <p>Directive preparation begins as soon as a decision is made or when contingency plans are requested. Preparation of directives may be simultaneous with COA analysis, particularly during hasty planning. If this occurs, <u>both</u> this category and COA participation are coded.</p> <p>Participation is defined as active involvement, such as explicit discussion, drafting, review or making suggestions. Mere presence or casual observation should not be recorded as participation.</p>
VARIETY OF PARTICIPANTS	PD 2.0 The number of staff sections participating in the development of directives.	number of staff sections	Staff sections are those recognized within the command center, such as G3 (Ops), G3 (Plans), G2, command, etc. Staff sections "recognized" either by specification in doctrine (e.g. G3, G4, FSE) or by local SOP.
DIRECTIVE PREPARATION TIME	PD 3.0 The time interval between a decision and the staff's completion of a directive intended to implement that decision.	time work ceases on the directive minus time of the decision	Directive preparation time begins either with a decision or with an instruction to prepare a contingency plan, and ends when the command center ceases to work on the directive.

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CATEGORY PD: PREPARATION OF DIRECTIVE MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
WARNING ORDER TIME	PD 4.0 The time interval between a decision and the issuance of a warning order.	time work ceases on the warning order minus time of the decision	If multiple warning orders are issued, each one is recorded for later analysis. Dissemination to multiple addressees is scored as multiple warning orders.
TIME-SPAN OF DIRECTIVE	PD 5.0 The length of time that the directive is to be effective.	time all elements of the directive are expected to be fully completed minus time the first element of the directive is supposed to be initiated	Directive time-span is equal to intended plan life (see G.2.0) It is a measure of how far into the future the command center believes it can exert control by planning.
Event-Driven Directives	PD 5.1 The percentage of directives issued that are event-driven, rather than specifying times for implementation and completion.	number of event-driven directives issued ----- number of directives issued	Event-driven directives specify an event or condition for implementation and/or completion (a "trigger" event), instead of specifying a time (e.g. "Attack as soon as engineer assets complete the bridge," rather than "Attack at 0400 on the 12th.") A list of trigger events will be prepared during analysis.
DIRECTIVE MATCH WITH DECISION	PD 6.0 Percentage of directive elements that are consistent with the elements of the stated decision. Elements are: mission assignments, task order, schedules and boundaries.	number of consistent elements ----- total number of elements	Elements that incompletely reflect the decision are considered to be inconsistent, as are explicit contradictions. Adjustments made after the decision and coordinated with command authority are <u>not</u> scored as errors.

CATEGORY PD: PREPARATION OF DIRECTIVE MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
CLARITY OF DIRECTIVES	PD 7.0 Percentage of directives which do not require clarification by the issuing headquarters.	number not requiring clarification ----- total number of directives	This measure will be scored by exception; that is, by requests for clarification. Observers should record requests for clarification; written communications should be reviewed during data reduction.
CONSISTENCY OF DIRECTIVES BETWEEN CPS	PD 8.0 Percentage of directives issued by alternate CPs that do not conflict with directives issued by the primary CP.	number of non-conflicting directives issued by alternate CPs ----- total number of directives issued by alternate CPs	Observers should be recording commander's decisions and verbal directives in detail. These are compared with the written directives during data analysis. Explicit contradiction or omission of an element or elements present in the primary CP's directive will be scored as errors. Adjustments made after the decision and coordinated with command authority are <u>not</u> scored as conflicts.
LEAD TIME FOR DIRECTIVE PLANNING	PD 9.0 The time available to subordinate commands for planning from the reception of the directive until the time it is to be executed.	time the first element of the directive is supposed to be initiated minus time directive received	Lead time for directive planning is variable PD 9.0; the command response time is the time from perception of the stimulus for action to the time the first element of the plan is supposed to be implemented.
Lead Time-Percentage	PD 9.1 Percentage of the command response time available to subordinate commands after the directive is issued.	lead time for directive planning ----- command response time	

CATEGORY PD: PREPARATION OF DIRECTIVE MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Warning Order Lead Time	PD 9.2 The time available to subordinate commands for planning from the reception of the warning order until the time the directive is to be executed.	time the first element of the directive is supposed to be initiated minus time warning order received	
Warning Order-Percentage	PD 9.3 The percentage of the command response time available to subordinate commands after the warning order is issued.	warning order lead time ----- command response time	Warning order lead time is variable PD 9.2; the activity period is as defined above.

CATEGORY IE : INFORMATION EXCHANGE

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
COORDINATION CYCLE TIME WITHIN CPs	IE 1.0 The time between the recognition of a need for coordination and the resolution of the issue.	time of resolution minus time need is perceived	Battlefield Action Coordinations focus on synchronizing battlefield activities (schedules, unit actions, supports, etc.) that can be perceived by a decision maker as requiring harmonizing. A coordination might not immediately affect units or battlefield conditions, but it must clearly carry the intent to attempt such change.
Coordination Request Time Within CPs	IE 1.1 The time between the recognition of a need for coordination and the time action is initiated.	time action initiated minus time need is perceived	
Coordination Completion Time Within CPs	IE 1.2 The time between the initiation of a coordination and the time action is resolved.	time of resolution minus time action initiated	
COORDINATION FREQUENCY WITHIN CPs	IE 2.0 The number of recognized circumstances requiring coordination within a CP.	number of circumstances explicitly recognized	
Coordination Initiation Within CPs	IE 2.1 Percentage of recognized coordinations initiated.	number of coordinations initiated ----- number of circumstances explicitly recognized	
Coordination Completion Within CPs	IE 2.2 Percentage of initiated coordinations completed.	number of coordinations completed ----- number of scoreable coordinations initiated	

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CATEGORY IE : INFORMATION EXCHANGE

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
COORDINATION CYCLE TIME BETWEEN CPs	IE 3.0 The time between the recognition of a need for coordination and the resolution of the issue.	time of resolution minus time need is perceived	
Coordination Request Time Between CPs	IE 3.1 The time between the recognition of a need for coordination and the time action is initiated.	time action is initiated minus time need is perceived	
Coordination Completion Time Between CPs	IE 3.2 The time between the initiation of a coordination and the time action is resolved.	time of resolution minus time action initiated	
COORDINATION FREQUENCY BETWEEN CPs	IE 4.0 The number of recognized circumstances requiring coordination between CPs.	number of explicitly recognized circumstances	Expressed as number per exercise day.
Coordination Initiation Between CPs	IE 4.1 Percentage of recognized coordinations initiated.	number of coordination attempts ----- number of circumstances explicitly recognized	
Coordination Completion Between CPs	IE 4.2 Percentage of initiated coordinations completed.	number of coordinations completed ----- number of scoreable coordinations initiated	

CATEGORY IE : INFORMATION EXCHANGE

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
INFORMATION SEEKING CYCLE TIME WITHIN CPs	IE 5.0 The time between the recognition of a need for information and the resolution of the issue.	time of resolution minus time need is perceived	Information seeking is the active solicitation of information in order to update the CP's battlefield picture or otherwise inform decision makers in circumstances that cannot be directly observed to relate to battlefield activity. This contrasts with battlefield coordination actions, which are directly connected to a decision maker's intent to affect units or conditions on the battlefield.
Information Seeking Request Time Within CPs	IE 5.1 The time between the recognition of a need for information and the time action is initiated.	time action initiated minus time need is perceived	
Information Seeking Completion Time Within CPs	IE 5.2 The time between the initiation of an action and its resolution.	time of resolution minus time action initiated	
INFORMATION SEEKING FREQUENCY WITHIN CPs	IE 6.0 The number of recognized circumstances requiring information seeking within a CP.	number of circumstances explicitly recognized	
Information Seeking Initiation Within CPs	IE 6.1 Percentage of recognized seekings initiated.	number of seekings initiated ----- number of circumstances explicitly recognized	

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CATEGORY IE : INFORMATION EXCHANGE

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Information Seeking Completions Within CPs	IE 6.2 Percentage of initiated seekings completed.	number of seekings completed ----- number of scoreable seekings initiated	
INFORMATION SEEKING CYCLE TIME BETWEEN CPs	IE 7.0 The time between the recognition of a need for information and the resolution of the issue.	time of resolution minus time need is perceived	
Information Seeking Request Time Between CPs	IE 7.1 The time between the recognition of a need for information and the time action is initiated.	time action is initiated minus time need is perceived	
Information Seeking Completion Time Between CPs	IE 7.2 The time between the initiation of an action and its resolution.	time of resolution minus time action initiated	
INFORMATION SEEKING FREQUENCY BETWEEN CPs	IE 8.0 The number of recognized circumstances requiring information seeking between CPs.	number of explicitly recognized circumstances	Expressed as number per exercise day.
Information Seeking Initiation Between CPs	IE 8.1 Percentage of recognized seekings initiated.	number of seeking attempts ----- number of circumstances explicitly recognized	
Information Seeking Completions Between CPs	IE 8.2 Percentage of initiated seekings completed.	number of seekings completed ----- number of scoreable seekings initiated	

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CATEGORY O: OUTGOING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
SITUATION REPORTS (SITREPs) SENT	O 1.0 The number of SITREPs sent.	number of reports sent in a selected period of time	A SITREP is a scheduled report on friendly troops that contains: identification of the unit(s) concerned, their location, their capabilities, and their combat activities.
% of SITREPs Sent Late	O 1.1 Percentage of SITREPs sent late.	number of reports sent late ----- total number of reports sent	
SITREP Lateness	O 1.2 Time late of those reports that are late.	time sent minus time due	
ENEMY INTELLIGENCE SUMMARIES (INTSUMs) SENT	O 2.0 The number of INTSUMs sent.	number of reports sent in a selected period of time	An INTSUM is a report similar to a SITREP, detailing friendly information on enemy troops.
% of INTSUMs Sent Late	O 2.1 Percentage of INTSUMs sent late.	number of reports sent late ----- total number of reports sent	
INTSUM Lateness	O 2.2 Time late of those reports that are late.	time sent minus time due	
SITREP ELEMENTS REPORTED	O 3.0 The number of SITREP elements included in reports.	number of elements reported	Scoring is by report element, not by item; that is, a report identifying four units and their locations would be scored as containing the identification and location elements.
INTSUM ELEMENTS REPORTED	O 4.0 The number of INTSUM elements included in reports.	number of elements reported	

CATEGORY O: OUTGOING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
SITREP ACCURACY	O 5.0 Percentage of reported non-location SITREP elements that are correct.	number of elements correctly reported ----- total number of non-location elements reported	Only those elements that are reported can be judged for accuracy. "Correct" reports are those which are consistent with ground truth. "Incorrect" reports are those inconsistent with ground truth.
SITREP Identification Accuracy	O 5.1 Percentage of friendly units identified correctly.	number of units correctly identified ----- total number of units identified	
SITREP Capability Accuracy	O 5.2 Percentage of unit capabilities that are reported correctly.	number of units whose capabilities are correctly reported ----- total number of unit capabilities reported	
SITREP Combat Activity Accuracy	O 5.3 Percentage of unit combat activities that are reported correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
SITREP Location Accuracy	O 5.4 Error in unit locations.	location reported minus ground truth unit location	
INTSUM ACCURACY	O 6.0 Percentage of reported non-location INTSUM elements that are correct.	number of elements correctly reported ----- total number of elements reported	

CATEGORY O: OUTGOING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
INTSUM Identification Accuracy	O 6.1 Percentage of reported enemy units identified correctly.	number of units correctly identified ----- total number of units identified	
INTSUM Capability Accuracy	O 6.2 Percentage of unit capabilities that are reported correctly.	number of units whose capabilities are correctly reported ----- total number of unit capabilities reported	
INTSUM Combat Activity Accuracy	O 6.3 Percentage of unit combat activities that are reported correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
INTSUM Location Accuracy	O 6.4 Error in unit locations.	location reported minus ground truth unit location	
OPERATION REPORT ACCURACY	O 7.0 Percentage of non-location report elements that are correct.	number of elements correctly reported ----- total number of elements reported	Operation reports are informal, unscheduled reports. The elements of operation reports are (like those of formal reports) unit identification, location, capability, and combat activity. Operation Reports deal with friendly units.
Operation Report Identification Accuracy	O 7.1 Percentage of friendly units correctly identified in spot reports.	units correctly identified ----- total number of units identified	

CATEGORY O: OUTGOING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Operation Report Capability Accuracy	O 7.2 Percentage of unit capabilities reported correctly.	number of units whose capabilities are correctly reported ----- total number of unit capabilities reported	
Operation Report Combat Activities Accuracy	O 7.3 Percentage of unit combat activities reported correctly.	number of units whose combat activities are correctly reported ----- total number of unit combat activities reported	
Operation Report Location Accuracy	O 7.4 Error in unit locations.	location reported minus ground truth unit location	
SPOT REPORT ACCURACY	O 8.0 Percentage of non-location report elements that are correct.	number of elements correctly reported ----- total number of elements reported	Spot reports are informal, unscheduled reports. They have the same elements as operation reports. Spot Reports deal with friendly knowledge of enemy units
Spot Report Identification Accuracy	O 8.1 Percentage of enemy units correctly identified in spot reports.	number of units correctly identified ----- total number of units identified	
Spot Report Capability Accuracy	O 8.2 Percentage of unit capabilities reported correctly.	number of units whose capabilities are correctly identified ----- total number of unit capabilities reported	

CATEGORY O: OUTGOING INFORMATION HANDLING

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Spot Report Combat Activities Accuracy	O 8.3 Percentage of unit combat activities reported correctly.	number of units whose activities are correctly reported ----- total number of unit combat activities reported	
Spot Report Location Accuracy	O 8.4 Error in unit locations.	location reported minus ground truth unit location	

CATEGORY X : EXERCISE CONTROL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
EXERCISE ENVIRONMENT AUTHENTICITY	X 1.0 The degree of reality in the exercise environment.	1=artificial 2=command post exercise (CPX) 3=field exercise (FX) 4=combat or crisis	
EXERCISE PERIOD	X 2.0 The period within the exercise.	dates of the exercise	It is intended that this measure have the potential for quarter-day or half-day detail.
Operational Phase of the Exercise	X 2.1 The phase of progression through the exercise.	1=beginning of exercise (STARTEX) 2=initial contact 3=defense/offense 4=end of exercise (ENDEX)	
HIGHER HQ REPRESENTATION	X 3.0 How completely is the higher HQ staff represented ?	1=entirely by computer simulation 2=by less than full staff but computer-assisted 3=by less than full staff without computer enhancement 4=by full staff	
Adjacent HQ Representation	X 3.1 Means of representing adjacent HQs.	1=entirely by computer simulation 2=by less than full staff but computer-assisted 3=by less than full staff without computer enhancement 4=by full staff	
UNIT EXPERIENCE	X 4.0 Has unit been employed in combat or in a crisis situation within the last 24 months ?	1=yes 0=no	

CATEGORY X : EXERCISE CONTROL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Unit Time in Field	X 4.1 Amount of time the headquarters being observed spent in the field in the last 24 months.	time in months	
Unit Time Out of Action	X 4.2 Length of time since the unit was last in action, either real or FTX.	time in months	
UNIT ECHELON	X 5.0 The unit's echelon.	1=brigade 2=division 3=corps	
UNIT TYPE	X 6.0 The nature of the unit.	1=light infantry 2=mechanized infantry 3=armor	
STAFF AVAILABLE	X 7.0 The percentage of the unit's normal headquarters and headquarters company (HHC) strength participating as staff in the exercise.	number of unit HHC NCOs, WOs, and officers participating as unit staff ----- TO & E number of HHC NCOs, WOs, and officers	Those members of the HHC present but not acting as "players" or present but serving with Red cell components or otherwise not contributing to the performance of the CP in the exercise are not included for purposes of computation.

CATEGORY X : EXERCISE CONTROL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
UNIT C2 AUTOMATION	X 8.0 Communications and automated C2 support systems available to unit.	1=Maneuver (MCS) 2=Air Defense (FAAD C3I) 3=Combat Service Support (CSSCS) 4=Fire Support (AFATDS) 5=Intelligence (ASAS) 6= Army Data Distribution System (ADDS) 7= Multiple Subscriber Equipment (MSE) 8=Single Integrated Circuit Ground to Air Radio System (SINCGARS)	
WEATHER IMPACT ON EXERCISE	X 9.0 Weather which affected the exercise.	1=rain 2=snow 3=fog 4=mud 5=sand 6=extreme high or low temperature 7=other (specify)	
TERRAIN IMPACT ON EXERCISE	X 10.0 Terrain which affected the exercise.	1=jungle/forest 2=desert 3=mountain 4=urban 5=wetland/swamp 6=combination of above (specify) 7=other (specify)	
HABITABILITY	X 11.0 The type of unit accommodations available.	1=fixed barracks 2=field conditions	
EXERCISE WORKLOAD	X 12.0 The longest span of continuous participation without rest for the immediate staff.	greatest number of hours of participation without rest	

CATEGORY X : EXERCISE CONTROL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Exercise Shifts	X 12.1 The shift length for the immediate staff.	length of shift in hours	
Exercise Overtime	X 12.2 Percentage of the immediate staff working shifts longer than the shift length designated as "normal" by SOP for this exercise.	number of principal participants working longer shifts ----- total principal participants	
COMBAT INTENSITY	X 13.0 Purpose, extent, and composition of exercise.	1=low intensity conflict 2=mid-intensity combat 3=high intensity combat	Low intensity conflict is conflict in which the primary or sole enemy forces are insurgents, terrorists, or special operations/unconventional warfare (SO/UW) troops. Mid-intensity conflict is that in which the primary enemy forces are mechanized or other conventional troops. High intensity conflict is that in which the primary enemy forces are mechanized troops, but features of low intensity conflict may be present, as may the use of nuclear, biological, or chemical weapons. This definition derives from "Identifying the Challenges", Chapter 1, Part 1, FM100-5, 1986.
EXERCISE UNCERTAINTY	X 14.0 Unit's degree of familiarity with scenario elements.	1=two or more "quite", no "not" 2=at least three "somewhat", or two "quite" and two "not" 3=at least two "not", no "quite"	
Scenario Uncertainty	X 14.1 Unit's degree of familiarity with exercise scenario-type.	1=quite 2=somewhat 3=not	

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CATEGORY X : EXERCISE CONTROL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Terrain Uncertainty	X 14.2 Unit's degree of familiarity with exercise terrain.	1=quite 2=somewhat 3=not	
Enemy Force Uncertainty	X 14.3 Unit's degree of familiarity with enemy forces.	1=quite 2=somewhat 3=not	
Own Force Uncertainty	X 14.4 Unit's degree of familiarity with friendly forces.	1=quite 2=somewhat 3=not	
PACE OF EXERCISE	X 15.0 Relative frequency of events creating new military situations.	number of decisions per exercise day	
THREAT ENVIRONMENT IN EXERCISE	X 16.0 Combined measure of enemy threat in which unit operates during exercise day.	1=low threat 2=medium threat 3=high threat	High threat environments are those where the force ratio is less than 2:1 in Blue's favor and the enemy has at least 5 (combat aircraft) on the sophistication scale and at least chemical or biological weapons. Moderate threat environments are those where the force ratio is less than 3:1 in Blue's favor and the enemy has at least 3 (armor) on the Sophistication scale and conventional weapons. Low threat environments are those below the moderate definitions.
Force Ratio Threat	X 16.1 Ratio of enemy forces to friendly forces.	measure of enemy force ----- corresponding measure of friendly force	Force ratio threat will be computed in division equivalents.

CATEGORY X : EXERCISE CONTROL MEASURES

<u>TITLE</u>	<u>TECHNICAL DEFINITION</u>	<u>COMPUTATION</u>	<u>OPERATIONAL DEFINITION</u>
Sophistication of Enemy Systems	X 16.2 On a relative scale, the most sophisticated equipment employed by enemy forces.	1=small arms 2=crew-served weapons 3=armor 4=helicopters 5=aircraft 6=surface to surface missiles (SSMs) 7=electronic warfare	
Toxicity of Enemy Weapons	X 16.3 On a relative scale, the most toxic weapons used by enemy forces.	0=conventional weapons 1=chemical weapons 2=biological weapons 3=nuclear weapons 4=combinations of the above (specify)	

APPENDIX E

ARMY COMMAND AND CONTROL EVALUATION SYSTEM
(ACCES)

DATA COLLECTION AND REDUCTION FORMS

OBSERVER JOURNAL

Observer: _____ DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____ Date -time-group _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

[illegible]

GENERAL MEASURES (G) ACCES 93:

Plan ID: _____

Directive ID: _____

Planning CP: _____

Prior Plan Success: Dominant ☐

This Cycle Stress: Low ☐

Adaptive ☐

Moderate ☐

Unsuccessful ☐

High ☐

Plan Initiative: Proactive ☐

Contingent ☐

Reactive ☐

Time Stimulus for Plan Perceived: _____

Time Directive Implementing Plan Issued: _____

Therefore: Planning Cycle Time: _____

Time First Element Supposed to be Initiated: _____

Time Plan Expected to be Fully Completed: _____

Therefore: Intended Plan Life: _____

Time Implemented: _____

Time Ended: _____

Therefore: Plan Duration: _____

Mission Implemented _____ Changed _____

Task Organization Implemented _____ Changed _____

Schedule Implemented _____ Changed _____

Boundaries Implemented _____ Changed _____

of Plan Elements Surviving: _____

This Plan's Success: Dominant ☐ Adaptive ☐ Unsuccessful ☐

Did a C2 Failure Cause the Plan to End? Yes ☐ No ☐

If so, a Failure in What Area?:

COURSE OF ACTION MEASURES (COA) ACCES 93:

Observer: _____ Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Staff:

Number of staff members involved in COA analysis: _____

Number of staff sections involved in COA analysis: _____

Courses Of Action:

COAs considered:
(Draw arrow by # of COA recommended)
(Circle # of COA selected)

	<i>Prediction of Enemy Reaction</i>	<i>Number of Enemy Reactions</i>	<i>Likelihood of Mission Accomplishment</i>	<i>Residual Friendly Capacity at Completion</i>	<i>Residual Enemy Capacity at Completion</i>	<i>Time COA Completed</i>	<i>End of Period COA Covers</i>
1. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
2. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
3. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
4. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
5. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
6. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
7. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
8. _____	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Number of other COAs articulated
but not seriously considered: _____

Other Related Data Sheets: _____

DECISION CONTEXT MEASURES (DC) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Stimulus for decision: _____

Time stimulus perceived at CP: _____

What was the decision? _____

What time was the decision made? _____

What officer made the decision?

Commander ☐

Assistant Division Commander ☐

Chief of Staff or Executive Officer ☐

G-1/S-1 ☐ G-2/S-2 ☐ G-3/S-3 ☐ G-4/S-4 ☐

Subordinate in commander's name ☐

Other _____ Unknown ☐

What unit(s) were affected? _____

What elements did the decision concern?

Mission ☐ Task Organization ☐ Schedule ☐ Boundaries ☐

Other _____ Unknown ☐

Identification of directive: _____

Type of operation (as per attached list): _____

Was a contingency activated? Yes ☐ No ☐

If Yes, title or other ID of the contingency: _____

Other related data sheets: _____

INFORMATION EXCHANGE MEASURES (IE) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

This exchange represents: Coordination ☐ Information Seeking ☐

This exchange took place: Within a CP ☐ Between CPs ☐

Time that need for exchange was perceived: _____

Describe the issue or action: _____

This exchange dealt with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

Exchange requested by: _____

Request initiated by: Request sent to: Time initiated: Time response received: Exchange made via:

[Possible means of exchange include: FM, MSE/field 'phone, Fax, Courier, MCS, Face to face.]

Other Related Data Sheets _____

INFORMATION HANDLING MEASURES (IH) ACCES 93:

Observer: _____ Date -time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Report Is: **Incoming** ☐ To: _____

Outgoing ☐ From: _____

SITREP ☐ INTSUM ☐

Operation Report ☐ Spot Report ☐

Warning Order/Directive ☐ Weather And Terrain Report ☐

Brief description of contents: _____

Time report is due (scheduled reports only): _____

Time report/warning order/directive is received (all incoming)/sent (all outgoing): _____

Time report/warning order/directive is perceived (all incoming): _____

Medium of transmission:

FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

If a report, mark all elements addressed:
Provide element details where available.

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

If a report is queried, mark all elements queried:
If report queried, by whom? _____

Unit ID ☐ _____

Unit location ☐ _____

Capability ☐ _____

Combat activity ☐ _____

Source of data in report: _____

Other related data sheets _____

SITUATION ASSESSMENT MEASURES (SA) ACCES 93:

Observer: _____

Date-time-group _____

DTAC ☐ DMAIN ☐ DREAR ☐ Brigade _____

Current Ops ☐ Plans ☐ Command ☐ Intelligence ☐ CSS ☐ Fire Support ☐ Special Staff ☐

Type of situation assessment: Comprehensive ☐ Selective ☐

Briefly describe the assessment: _____

Time assessment expressed: _____ By whom? _____

Reason for assessment: _____

Assessment dealt with:

Friendly Force:

- ☐ Mission
- ☐ Task Organization
- ☐ Disposition
- ☐ Activity
- ☐ Status
- ☐ Support

Enemy Force:

- ☐ Composition
- ☐ Disposition
- ☐ Combat Power
- ☐ Activity
- ☐ Capabilities

This assessment covered the current and expected situation up to time: _____

This assessment contributed to a decision at time: _____

Were other futures considered possible? Yes ☐ No ☐ How Many?: _____

Other possibilities were: _____

Other related data sheets: _____

Analyst Use Only

Assessment was: Correct ☐ Incorrect ☐

PREPARATION OF DIRECTIVES MEASURES (PD) ACCES 93:

Observer: _____

Date -time-group _____

DTAC ☐

DMAIN ☐

DREAR ☐

Brigade _____

Current Ops ☐

Plans ☐

Command ☐

Intelligence ☐

CSS ☐

Fire Support ☐

Special Staff ☐

Type of directive: Warning Order ☐ FRAGO ☐ Other ☐ (Specify Type) _____

The order/directive changed or established:

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

The order/directive deals with:

Personnel ☐ Intelligence ☐ Operations ☐ Logistics ☐

DESCRIBE the context and content: _____

Which (if any) earlier decision and/or plan was this directive based on? _____

If not based on earlier decision and/or plan, who made the decision, and under what circumstances? _____

of staff members participating in directive preparation: _____ # of staff sections represented: _____

Time directive preparation started at this CP: _____

Time directive preparation stopped at this CP: _____

Total prep. time: _____

Time directive issued: _____

Time directive received by subordinate commands (separate times by commas): _____

Medium of transmission: FM ☐ MSE/field 'phone ☐ Fax ☐ Brief ☐ Courier ☐ MCS ☐

Did directive require clarification? Yes ☐ No ☐

From whom, and why? _____

Was directive event-driven? Yes ☐ No ☐ By what? _____

Time first element supposed to be initiated: _____

Time expected to be fully completed: _____

Total time span: _____

Other related data sheets: _____

Analyst Use Only

Time stimulus perceived at CP: _____

Was directive consistent with the decision? Yes ☐ No ☐

If not, which elements were inconsistent?

Missions ☐ Task Organization ☐ Schedules ☐ Boundaries ☐

If issued by an alternate CP, does directive conflict with one from the primary CP? Yes ☐ No ☐

Operations (from FM 100-5)

Offense: Movement to Contact
 Hasty Attack
 Deliberate Attack
 Exploitation & Pursuit
 Special Purpose Ops

(Reconnaissance in force, spoiling/counterattacks,
feints/demonstrations, offensive reliefs, raids.)

Defense: Area
 Mobile
 Security (Screening/Covering)
 Reserve Ops
 Rear Ops

Retrograde

Support: Indirect Fire Support
 Combat Support
 Command and Control